

**FORMATIVE EVALUATION OF
THE AFRICAN EMERGENCY
LOCUST/GRASSHOPPER (AELGA) PROJECT**

(Project # 625-0517 and 698-0517)

April, 1996

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Contract Number:

AEP-5451-I-00-2049-00
Delivery Order 30

TABLE OF CONTENTS

LIST OF ACRONYMS	iv
EXECUTIVE SUMMARY	vi
PROJECT IDENTIFICATION DATA SHEET	xiv
I. INTRODUCTION	1
A. The Objectives of the AELGA Project	1
B. The Objectives and Nature of this Evaluation	1
1. Formative Evaluation	2
2. Design vs. Performance	2
3. Qualitative vs. Quantitative Evaluation	3
C. Evaluation Methodology and Team	3
1. Data and Information Collection	3
2. Comparison of Early and Late Time Periods	4
3. The Evaluation Team	4
4. The Report and the Findings-Conclusions-Recommendations Model	5
II. OVERVIEW OF AELGA OBJECTIVES, INVESTMENTS AND ACTIVITIES	6
A. AELGA Background and History	6
B. AELGA's Current Focus	6
1. Changes in Objectives	6
2. Changes in Geographic and Substantive Focus	6
C. Profiles of AELGA Investments	7
D. Profiles of Principal AELGA Activities	9
1. Donor Collaboration	9
2. Emergency Assistance	9
3. Pesticide Management	10
4. Supplemental Environmental Assessments	11
5. Training of Crop Protection Personnel in L/G Prevention Approaches	11
6. Biological Control Research	12
7. Economic Threshold Research	12
8. Publications/Awareness Campaign	13
III. EVOLUTION OF AELGA PROJECT DESIGN, BUDGET AND CONCEPTS	14
A. Evolution of the AELGA Project Design and Budget	14
1. The Project Paper Logical Framework	14
2. Restatement of Project Purpose	16
3. Evolution of Project Budget and Responsibilities	16
4. Evolution of the Role of National Crop Protection Units	17
5. Is AELGA Becoming a Regional Pest Control and Crop Protection Project?	20
6. Monitoring and Evaluation	20
7. A Development-Disaster Assistance Hybrid	21
B. Conclusions	22
C. Recommendations	22
D. Evolution of L/G Control and Management Concepts	23
1. A Definition of "Preventive Control" put forth by AELGA	23
2. The Feasibility of "Preventive Control"	24

3.	Proactive Control: A More Feasible Approach	24
4.	The Difference between Proaction and Prevention	25
5.	Is "Proaction" Different from L/G Control Practices Since 1962?	25
6.	Is the Proactive Approach Feasible?	26
7.	L/G Population Dynamics: Inexorable Arithmetic	27
E.	Conclusions	28
F.	Recommendations	28
IV.	AELGA ACHIEVEMENT OF GOAL AND PURPOSE LEVEL OBJECTIVES	30
A.	Readjustments to the Project Paper Logical Framework	30
1.	The Logical Framework Goal and Purpose	30
2.	Elements of the Goal and Purpose that Are Outside the Project Logic	30
3.	Goal and Purpose Level Elements that are within the Project Logic	30
4.	Project Elements that Are Not in the Logical Framework, But Should Be	31
B.	Project Paper Treatment of Evaluation at the Goal and Purpose Levels	31
C.	Scientific Articles Comparing the 1985-1989 and 1992-1994 L/G Management Efforts	33
D.	Use of the 1985-1989 vs. 1992-1994 Comparison to Allocate Resources	33
1.	Amendment # 8 to the AELGA Project Paper	33
2.	AELGA's Justification for FAOs EMPRES (Emergency Prevention System)	34
3.	Different Interpretations for Scientific and USAID Audiences	34
E.	Evaluation Team Assessment of the AELGA Project Achievement of its Purpose and Goal Level Objectives	35
1.	Points of Agreement between AELGA and Evaluation Comparison of the 1985-	35
2.	Reasons Why Comparisons between the 1985-1989 Plague and the 1992-1994 Plague Are Misleading	36
3.	Another Point of View	38
F.	Conclusions	38
G.	Recommendations	39
V.	ACHIEVEMENT OF PROJECT OUTPUTS	40
A.	Training in Proactive L/G Control	40
1.	Training During Plagues and Upsurges	41
2.	AELGA's Current Training Approach	41
3.	Training in Biological Control	41
B.	Conclusions	42
C.	L/G Control and Management Mechanisms	42
1.	Pesticide and Environmental Management	42
2.	Early Warning and Monitoring	47
3.	L/G Control: a Mix of Ground and Air Operations	50
4.	Control of the Eritrea 1995 Upsurge	54
5.	A Debate on The Origins of the Eritrea-1995 Upsurge	54
D.	Conclusions	55
E.	Recommendations	57
F.	Research and Publications	58
1.	Bio-control Research	58
2.	Economic Threshold Research	61
3.	Publications and Awareness Campaign	66
G.	Conclusions Regarding Research and Publications	66
1.	Bio-Control Research	66
2.	Conclusions Which Affect Who Should Fund and Manage the Bio-Control	

	Research	67
	3. Economic Threshold Research	67
	4. Awareness and Publications	68
H.	Recommendations	68
	1. Bio-Control Research	68
	2. Economic Threshold Research	68
	3. Awareness Program and Publications	69
VI.	MODES OF DELIVERING SUPPORT TO L/G CONTROL EFFORTS	73
A.	Collaboration among Donors	73
	1. Collaboration with FAO	73
	2. EMPRES	74
	3. Country Level Coordination	76
	4. Rapid Response and Disaster Assistance Mechanisms	77
	5. AELGA Activities Through Bilateral Missions	77
B.	Conclusions	78
C.	Recommendations	80
D.	Collaboration with African Partners	82
	1. Collaboration with Specific National Crop Protection Services	82
	2. Collaboration with Regional Organizations	85
	3. A Broader Perspective on Collaboration with African Organizations	87
E.	Conclusions	90
F.	Recommendations	91
VII.	AELGA PROJECT MANAGEMENT	93
A.	USAID Washington	93
B.	AELGA (RSSA) Staff	93
C.	Administrative Aspects of AELGA Collaboration with FAO	94
	1. FAO Perceptions of USAID	94
	2. The Nature of AELGA's Investment with FAO	95
	3. USAID and FAO'S Financial Systems	95
D.	Conclusions	95
E.	Recommendations	96
VIII.	CONCLUSIONS, RECOMMENDATIONS, STRATEGY, ACTION	98
A.	Chapter Organization	98
B.	Analytical and Monitoring Tasks	98
C.	Overview of this Formative Evaluation of AELGA	99
D.	Action Plan Derived from this Evaluation	102
E.	Africa Bureau Policy Decisions Regarding AELGA	110

Annex A:	Detailed Breakdown of AELGA Investments
Annex B:	Bibliography
Annex C:	Contacts Made During Evaluation
Annex D:	Scope of Work
Annex E:	RSSA Comments
Annex F:	Team Members' Response to RSSA Comments

LIST OF ACRONYMS

AELGA	African Emergency Locust and Grasshopper Project
APHIS	USDA's Animal and Plant Health Inspection Service
CCC	Country Coordinating Committee
DLCC	Desert Locust Control Commission
DLCO-EA	Desert Locust Control Organization-East Africa
DLIS	Desert Locust Information Service
DRC	USAID/Africa Bureau Disaster Response Coordination
ECLO	Emergency Center for Locust Operations
EMPRES	Emergency Prevention System
FAO	Food and Agriculture Organization
FEWS	Famine Early Warning System
GHLISM	Sahelian Grasshopper/Locust Crop Loss Simulation
GIS	Geographic Information System
GTZ	German Technical Assistance Organization
ICIPE	International Center for Insect Physiology and Ecology
IFAD	International Fund for Agricultural Development
INIDA	Intstituto Internacional de Investigacao e Desenvolvimento Agrariae
IPM	Integrated Pest Management
IRLCO	International Red Locust Control Organization
MSI	Management Systems International, Inc.
MSU	Montana State University
NOAA	U.S. National Oceanic and Atmospheric Administration
NPPS	Mali's National Plant Protection Service
OCLALAV	Organization Commune de Lutte Antiacridienne et de Lutte Antiaviare
OFDA	USAID/Office of Foreign Disaster Assistance

OIC	USAID/Office of International Cooperation
OICMA	International Organization for Control of the African Migratory Locust
OTA	U.S. Office of Technology Assessment
PEA	Programmatic Environmental Assessment
RSSA	Resources Support Services Agreement
SEA	Supplemental Environmental Assessment
TR&D	Tropical Research and Development
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

EXECUTIVE SUMMARY

A. Project History

1. Project Origin

Major infestations of locusts and grasshoppers in Africa generally occur following the return of rains after extended periods of drought. The severe drought of the early 1980s was followed by normal or above normal rains in 1985 and 1986 which resulted in major locust/grasshopper infestations. Largely in response to this crisis the Africa Emergency Locust/Grasshopper (AELGA) Project (698-0517) was authorized in April 1987 with a LOP funding of \$15 million. The original goal and purpose were:

Goal: Improved nutritional status of Africans by reduction of locust/grasshopper plague-induced famine and related socio-economic suffering.

Purpose To treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests and help to establish improved management and control mechanisms.

2. Project Evolution

Since the original authorization, there have been ten amendments to the project, and the LOP funding level now stands at \$46,035,000. The 1990 PACD has been extended several times, and is now set at April 1997. In addition to adding eight years and more than \$30,000,000 to the AELGA budget, the effect of the 10 amendments has been to expand project responsibility toward building longer term l/g control mechanisms, and to address problems with pests other than l/gs such as armyworms.

3. Extraordinary Dispensation

Since 1987, the AELGA project has been given extraordinary dispensation to operate free of the tools and mechanisms USAID normally uses to plan and manage its projects. The original Project Paper, Logical Framework, and feasibility analyses prepared in 1987 were not fully adequate, given the size of the investment. Since 1987 there has been no Logical Framework up-date; no feasibility analyses from the technical, institutional and economic points of view; no truly external evaluations; and until recently no requirement to submit work plans to USAID's Africa Bureau for approval. In sum, over a period of eight years, and through \$30,000,000 of budget approval, AELGA has operated as a development project, but has been allowed to play by flexible rules akin to those reserved for short term disaster assistance efforts.

Recommendation: AELGA should design and install a Logical Framework, work plan approval, and progress monitoring systems that meet AELGA and USAID Africa Bureau objectives and needs.

B. Project Justification and Achievement of Goal and Purpose Objectives

1. Project Justification

Justification for the extensions and budget accorded AELGA through ten amendments has in essence been that: a) "AELGA successfully conjoins disaster assistance and development"; and b) "Plague prevention costs less than disaster assistance." (Amendment #8 in 1993 which accorded \$10,000,000 to the AELGA budget). The "success" referred to in the first justification is not spelled out clearly enough to permit evaluation. In favor of the second justification it has been argued in management documents and scholarly articles that l/g control during a 1992-1994 upsurge averted or avoided a plague of 1985-1989 proportions and massive disaster assistance expenditure. Comparison has been made between the \$19,000,000 spent by USAID during the 1992-1994 period, and the larger \$300,000,000 expenditure during the 1985-1989 period (\$60,000,000 by USAID).

2. AELGA Achievement of Goal and Purpose Objectives

Because the 1985-1989 vs. 1992-1994 comparison was decisive in guiding USAID decisions, the evaluation team has examined it. Also, comparison of the l/g control of infestations during the 1985-1989 and 1992-1994 periods is the closest one can come at present to assessing AELGA achievement of purpose and goal-level objectives. (Other aspects of the goal and purpose, such as improved nutritional status, reduced famine, and treatment of rehabilitation and recovery problems have become, for theoretical and project history reasons, tangential to the project). With regard to comparing the 1985-1989, and 1992-1994 infestations, and efforts to control them, the evaluation team concludes as follows:

a. The Two Investments Are Not Comparable

The 1992-1994 investment *built* on the 1985-1989 investment, and therefore, cannot be compared to it and above all cannot be considered to have saved money in relation to it. As FAO analysis pointed out in 1987:

"At the end of two years of emergency, Plant Protection Services have probably received *more supplies and equipment than they have in the previous 20 years*. This is an enormous capital to which must be added the human capital, the tens of thousands of farmers trained, and the national plant protection technicians trained on the job, and at special seminars in the region and abroad. (FAO Technical Meeting, Dec. 8-9, 1987)

b. The Two Upsurges Are Probably Not Comparable

It is probable that the 1992-1994 upsurge was not a new plague in the making, as AELGA has posited. L/g sightings, duration of droughts, l/g species comparisons and common breeding areas not surveyed due to hostile activity, indicate that recession between the two upsurges was not total, and that the 1993-1994 upsurge may have been an aftershock following the 1985-1989 plague. Major plagues are rare, unpredictable events and surveys can never be all-inclusive. Therefore, only with extreme caution should one argue that: 1) an upsurge would have evolved into a major plague; or 2) that a control effort has prevented or averted a major plague. In scholarly articles on the 1992-

1994 period, which have been a focus of AELGA effort, this need for caution is recognized.

Recommendation: AELGA should use its intellectual resources to collect and analyze data on the feasibility and impact of the "proactive" approaches, so that USAID can know how to proceed after this project's PACD. Waiting for a Final Evaluation is a mistake, because external evaluations are short-term efforts that almost never generate original data.

C. AELGA Achievement of Outputs

Due to the sketchiness of the 1987 Logical Framework, and lack of updates during the intervening eight years, AELGA has no official, measurable outputs. However, "things AELGA has been doing that lead to the control and management of l/g infestations" are divisible into:

1. definition of a strategy for controlling l/g infestations;
2. training and institutional strengthening;
3. l/g control mechanisms;
4. research and publications; and
5. collaboration with FAO and other donors.

The following paragraphs summarize progress in areas with the most importance for the future.

1. Definition of an L/G Control Strategy

The l/g control strategy developed by AELGA is defined as follows:

" . . . proaction entails control operations that are conducted *against outbreaks (geographically localized swarm development) before plague status is reached*. Proaction relies heavily on early detection of locust aggregations in breeding areas and strategic prepositioning of resources. Without empirical intervention threshold levels, timing of intervention is determined through a blend of estimated gregarizing locusts, a local capacity for control, experience, intuition, gestalt, and political pressure. (*Proaction: Strategic Framework for Today's Reality*. Showler, 1995 P.5)

If the evaluation team understands correctly, "proaction" represents a temporary *retreat from "preventive control"* which: a) is considered not feasible at present; b) aims at control of l/gs **before** they form swarms; and c) at **permanent** recessions in l/g populations.

2. Training and Strengthening of National Crop Protection Services

Some history: 1) Institutional strengthening (but not training) of national crop protection units was explicitly rejected by the 1987 Project Paper for sustainability reasons; 2) during the 1986-1989 plague, AELGA trained hundreds of extensionists in various aspects of l/g control; 3) a 1989 evaluation recommended institutional strengthening of national crop protection services, in effect countermanding the Project Paper, with no sustainability analysis or recurrent costs analysis; and 4) since 1994 training of national crop protection services in "proactive" l/g control has become a centerpiece of the AELGA approach. Programs have been carried out for agents and extensionists in Eritrea and Ethiopia.

When taken on its own, the AELGA training program seems to be doing a good job teaching agents, extensionists, and eventually farmers "proactive" l/g control techniques. That is, the agents and extensionists are learning "proaction" and within limits and for the time being at least, putting into practice what they learn. However, examination of the training program in connection to AELGA's overall objectives, gives rise to serious concerns.

The evaluation team doubts whether:

- a. "proaction" as currently defined can be promoted; and
- b. "proaction" as carried out by most national crop protection services (as currently constituted) can achieve the high kill rates over large, often remote areas necessary to dampen the inexorable arithmetic of l/g dynamics during the period leading up to major plagues.

Recommendation: Concentrate training on crop protection services with: a) separate l/g control units and agents stationed in l/g breeding areas; and b) on services that are strong and show promise of major improvement in overall organizational strengthening.

3. Early warning and monitoring

In this evaluation progress at developing early warning tools of the following types is described: meteorological data, satellite vegetation index data, remote sensing, GIS systems, ecological models, and the desert locust information service. Due to a lack of time, meaningful evaluation, in the form of system performance tests, was not carried out.

Recommendation: Do field-testing of warning and monitoring system performance in terms of coverage, turn-around time, accuracy, user-friendliness, and utility in making decisions regarding l/g control efforts. Collaborate with parallel efforts for the Famine Early Warning System (FEWS).

4. Pesticide Management

During the 1985-1989 period, USAID instigated renunciation throughout Africa of the environmentally dangerous pesticide dieldrin. Through its "triangulation" strategy, AELGA may have set a valuable precedent for transfer of pesticides from countries with excesses to countries

where they are needed, and returning excesses to their countries of origin to be incinerated. Both efforts may prove valuable for keeping future environmental contamination by pesticides under control. They do not, however, address the issue of l/g pesticides from *previous control campaigns* that through leakage are slowly contaminating many African locations and posing serious long-term health and soil hazards.

Through the 1990 Office of Technology Assessment (OTA) report, the U.S. Congress has requested that USAID assess pesticide disposal problems associated with l/g control efforts in Africa from "legal, ethical, political, and budgetary view-points." The report asks, "How is USAID addressing insecticide storage and disposal problems resulting from previous locust/grasshopper control efforts? What monitoring is underway for longer term health and environmental effect?"

Recommendation: USAID should seriously consider taking up the U.S. Congress challenge regarding pesticide disposal problems, during a future project if not in this one. A major pesticide disposal effort would allow AELGA to comply with the "treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests" clause in the Project Paper Purpose statement which, until now, has received little attention.

5. A Mix of Ground and Aerial Operations

L/g control makes use of both ground and aerial operations. So far, AELGA has concentrated on ground-based aspects. Many documents warn against spraying errors by airplanes, especially when guidance from the ground or communications are faulty, and apparently during the 1995 upsurge in Eritrea spraying errors occurred.

Recommendation: AELGA's concern should be with the performance of the whole system, including aerial operations. The Programmatic Environmental Assessment (PEA), the OTA report, and USAID's Locust Management Operations Guidebook place the responsibility squarely with USAID project management for assuring that USAID-purchased pesticides are used properly. AELGA should systematically train the Desert Locust Control Organization/ East Africa (DLCO-EA), and other aerial support groups, so that spraying errors are eliminated.

6. Bio-Control Research

AELGA's encouragement of research on entomopoxes, microsporidium and fungi is commendable, an investment in the l/g tools of the future and opens the door to radically revised control approaches, and major environmental breakthroughs.

Recommendation: Consider five-year funding for bio-control research, either through USAID or another donor. Search for a series of bio-control products, perhaps for different climates. Building African bio-control research capacity, and a bio-control industry may be directions for the future.

7. Economic Threshold Research

AELGA's 1987 Project Paper stipulates that:

"... a serious professional effort must be made during the life of the project to develop reliable data against which the various interventions and activities of the project can be evaluated, and from which economic judgements can be made." (p. 34)

In spite of the Project Paper stipulation, AELGA has gone eight years without a useable analysis, although a contract was let. Effort invested by others in economic threshold research has been substantial; however, none of the agri-economic analyses, past or present, are satisfactory or show much promise. In its 1995 work plan, AELGA proposed that USAID co-fund a FAO effort to produce "data on the economics of locust plagues and control programs."

Recommendation: The evaluation team supports this proposal and suggest pitfalls to avoid, and new models and issues to explore, including: the financing and economics of aerial operations, disaster economics, natural resource economics, and an "Expected Value" approach.

8. Collaboration with FAO

Beginning with AELGA's original 1987 Project Paper, collaboration with FAO has been part of the project. Donor coordination at FAO includes many meetings, committees, memos, and international fora. There is a philosophical agreement among donors and at FAO that prevention is preferable to reaction to plagues, and FAO's budget reflects a shift from reaction to upsurges toward prevention. There is, however, a lively debate on what prevention means in a concrete sense. Valuable coordination efforts are being made in the areas of pesticide disposal and studies of economic criteria for guiding l/g control efforts. Donor coordination at this point does not seem to include strong donor coordination at the country level.

The Emergency Prevention System (EMPRES): EMPRES is a program being developed by AELGA with FAO and other donors. The final EMPRES proposal was not available at the time this report was prepared. Questions that the evaluation team has about EMPRES are the same as the questions it has about AELGA. That is, what is the technical, institutional and economic feasibility of the "proactive" approach to reducing the frequency and size of l/g plagues and the damage they do? Also, to what extent is AELGA making a long-term commitment with FAO on USAID's behalf?

D. A Prediction and a Recommendation

The evaluation team concludes that there is a mismatch between AELGA's approach and the high kill rates, achieved repeatedly over consecutive l/g generations, over wide, often remote areas, that are necessary to reduce the frequency and size of major l/g plagues. The basis for the conclusion is as follows:

- Definitions of "prevention" and "proaction" as carried out in the field, seem little different from the l/g control strategy applied between 1962 and 1985.

- Estimates and computer models of l/g population increase preceding plagues place even the theoretical feasibility of "proaction" in doubt.
- Regional organizations which in the past had some of the necessary strengths and tools to reduce l/g plagues are in a deteriorated state.
- Most national crop protection services are weak, and some do not have separate l/g control units.
- Since l/g infestations do not respect national boundaries, a national crop services approach means that even countries strong at l/g control will be at the mercy of neighboring countries' weaknesses.

Recommendation: All parties should prepare for frequent requests for aircraft, and calls on aerial services and donors for reactive control of l/gs. AELGA and USAID should set up an *emergency fund* to be used for control operations only, and not to be used for training, research, or awareness programs.

D. AELGA Activities through Bilateral USAID Missions

USAID reengineering, and Bilateral Mission Strategic Objectives, which tend to be medium term and economic or environmental, would seem to operate against inclusion of AELGA activities in Mission portfolios. (Examples among the countries visited where AELGA activities were considered for mission portfolios, but rejected are Mali and Madagascar.)

Recommendation: For the time being, AELGA's future can generally not be "devolved" to bilateral mission portfolios, but must be developed at either the regional or global level within USAID, in support of agency-wide objectives.

E. Lessons Learned for USAID Managers

1. Large plagues are relatively rare occurrences and most outbreaks and upsurges would not become plagues even if left alone. Therefore, do not assume, without sound proof, that lack of plagues, or damage from plagues, means that plague prevention (or "proaction") has been effective.
2. Implementers must be as rigorous and cautious in drawing cause-effect conclusions regarding the effects of "proaction" when communicating with USAID managers as they are when communicating with the scientific community.
3. The costliness of disaster assistance reaction to plagues is not sufficient justification for investment in prevention or "proaction." The "proaction" must show promise of reducing the frequency and size of plagues for the investment to be worth it.

4. USAID should avoid large budget allocations to projects based solely on data presented in *internal* evaluations, analyses and articles.

PROJECT IDENTIFICATION DATA SHEET

1. Country: United States, Italy, and Africa Regional
2. Project Title: Africa Emergency Locust/Grasshopper Assistance (AELGA)
3. Project Number: 625-0517 and 698-0517
4. Project Dates:
 - a. First Project Agreement: 3/17/87
 - b. Final Obligation Date: FY -- (planned/actual)
 - c. Current Project Assistance Completion Date: 4/97
5. Project Funding: (amounts obligated to date in dollars or dollar equivalents from the following sources)
 - a. A.I.D. Funding (grant and/or loan) \$31,932,063
 - b. Other Major Donors
 - c. Host Country Counterpart Funds
 - d. Total Funding \$31,932,063
6. Mode of Implementation: Various: RSSA, Bilateral Mission, grants to FAO, grants to universities, contracts with consulting organizations.
7. Project Designers: USAID Africa Bureau, Global Bureau, OFDA.
8. Responsible Mission Officials: (for the life of the project)

Project Managers: There have been four project managers for AELGA since it started in 1987. During the last three years it has had three project managers and been located in three entities of the Africa Bureau.

Current Project Officer: John Rifenbark
Mission Director: N/A
9. Previous Evaluation(s):

Mid-Term Evaluation, 1989, Internal/External
TAMS/COCP, 1989, External
Assessment of AELGA, 1993, Internal
Evaluation of Support of Niger, 6/94, Internal/External
Evaluation of Biological Control Research, 7/95, Internal

I. INTRODUCTION

This report presents the results of an evaluation of the Africa Emergency Locust/Grasshopper (AELGA) project. The project was originally funded as a disaster relief effort in 1987 with a Project Completion Date (PACD) of 1989 and a budget of \$15 Million. Since then, through a series of amendments the AELGA project has expanded its objectives and budget (to more than \$46,035,000), and has a PACD of April 1997.

The evaluation presented in this report was conceived of as the AELGA project's *last formative evaluation*. It is also the project's ***first USAID-funded, totally-external evaluation***, although there have been several internal evaluations, and all of USAID's locust-grasshopper control efforts were the subject of a Congressional Office of Technology Assessment analysis in 1989.

A. The Objectives of the AELGA Project

The objective of AELGA project, as expressed in the original 1987 Project Paper is:

To provide assistance in managing l/g populations, and thereby contribute to the improved nutritional status and well being of Africans by reducing the threat of locust and grasshopper plague-induced famine, and its associated economic and social suffering.

The project's purposes evolved through a number of amendments to include the following:

- To treat recovery and rehabilitation aspects of problems caused by the current locust and grasshopper pest problem threatening many African countries and to help bring it under control.
- Establish improved management and control mechanisms that will keep this problem under control in the future.
- Support early warning of famine threats posed by locust and other episodic problems.

In addition, Amendment Number 10 to AELGA's authorization states that the project is "to provide support for the *long-term activities* involved in the prevention and mitigation of locust/grasshopper damage."

B. The Objectives and Nature of this Evaluation

Objectives of the evaluation as expressed in the Evaluation Scope of Work are to:

- Qualitatively determine past successes of the project in accordance with the project's purposes and its success in following the recommendations of past evaluations and assessments.

- Refine project direction through project completion, provide rational direction for designing a new project for sustainable control of locust/ grasshopper and other emergency pests.

A complete Scope of Work is found in Annex D.

1. Formative Evaluation

This evaluation is "formative" rather than "summative." That is, its role is to guide an ongoing project, rather than to exhaustively sum up a project's accomplishments after it is over. In MSI's Evaluation Workshop Manual, formative evaluation is defined as follows:

Formative evaluation asks the question: "How can we improve an on-going project or program?" An analysis of what has happened, and why it happened is used to guide implementation and possible redesign as a project or program is being implemented, while there is still time to make changes. It is particularly helpful when the *strategy* for achieving certain implementation benchmarks is problematical...

To be most useful, formative evaluation needs to pay attention to interim impacts and their trends, to changes in underlying assumptions, and to events in the broader environment beyond the project that may affect final performance. It cannot be limited solely or even mainly to internal project benchmarks, pre-established implementation and management processes. USAID's experience in formative evaluation demonstrates that it is all too easy to overlook the forest for the trees, and to generate "status reports" or descriptions of management problems rather than evaluations.

Other "formative" characteristics of this evaluation are:

- Exhaustive and equal attention is not given to all aspects of the project. Evaluation resources were *very* scarce, so attention was concentrated on project areas with *implications for the future*, or where important decisions need to be made. Little attention was given to areas already covered by internal evaluations. The obligation to exhaustively sum up everything a project has done lies with summative evaluation.
- Formative evaluations tend to have modest levels of funding compared to final evaluations. The job of a formative evaluation is to re-orient a project, point it in the right direction, check assumptions, raise questions, and cause the project to analyze itself, rather than draw summative, final conclusions.
- In this evaluation, recommendations are sometimes given which, rather than suggesting concrete actions, suggest the criteria, information and analysis on which important decisions should be based.

2. Design vs. Performance

All evaluations, be they formative or summative, address a mix of *performance issues and design issues*, that is, they analyze and draw conclusions regarding:

- a. the appropriateness and feasibility of objectives, strategies and plans on the one hand, and
- b. how well the strategies and plans are carried out on the other. They answer the question, "Does it make sense?" as well as the question, "Was it well done?" In this evaluation, there is a decided emphasis on *design and strategy issues* (does it make sense?), due to AELGA's special history. (As detailed in Chapter II, AELGA's strategy and objectives have evolved, rather than being established by a thorough Project Paper and feasibility analysis).

3. Qualitative vs. Quantitative Evaluation

This evaluation is largely qualitative in nature rather than quantitative. That is, the evaluation is based more (but not exclusively) on description and logic than on hard numbers. To say that an evaluation is qualitative is not the same as saying an evaluation is not objective. Qualitative assessments based on descriptive evidence and logic can often distinguish between project success and failure, or progress and lack of progress. Qualitative assessments cannot, however, go beyond very rough assessments of the extent of success or progress or cost/benefit. Where there is doubt on an issue, this evaluation presents "both sides of the story."

The reason for the qualitative nature of this evaluation is the lack of clear success indicators for AELGA. Establishment of clear success indicators has been difficult for AELGA due to a shift from a "disaster relief" mode, to a "prevention-development" mode. Indicators developed at the project's inception would, therefore, probably have been inappropriate for measuring success as currently envisioned.

C. Evaluation Methodology and Team

1. Data and Information Collection

Raw material for this evaluation was collected through:

- analysis of hundreds of reports and documents;
- over fifty interviews and meetings; and
- observation visits to crop protection units, research laboratories, pesticide disposal facilities, l/g control organizations, and sites where l/g control was in progress.

The interviews, meetings and visits took place in Mali, Eritrea, Ethiopia, Madagascar, Kenya, FAO headquarters in Rome, and USAID and AELGA headquarters in Washington, D.C.

Several days after the evaluation team returned from its trip to Rome and Africa, a preliminary and incomplete draft was distributed to a wide range of people who had participated in or observed the AELGA project. Extensive comments made regarding the preliminary draft helped the evaluation team complete this report.

Level of Effort: The field work was accomplished over a four week period. Three days in Washington, D.C., were allowed for preparation of a preliminary report and one and one-half weeks were available for preparing the final report.

2. Comparison of Early and Late Time Periods

Project progress was assessed through comparison of:

- performance during the 1985-1989 l/g infestation with
- performance since 1988, in particular during the 1992-1994 l/g infestation.

Since 1988 AELGA has focused on moving from a "disaster relief" mode of dealing with l/g infestations to a "prevention-development-institution building" model. There is a cross-country component to this "disaster-development" comparison, since the Mali investment was primarily before 1988; investment in Eritrea has been recent; and Madagascar falls somewhere in the middle.

3. The Evaluation Team

This evaluation was carried out through an IQC work order contract with Management Systems International (MSI). Team members were:

- **George Cavin:** an entomologist with long experience working on anti-locust and grasshopper programs in Africa and the Near East. Mr. Cavin was regional director for USDA/APHIS, and is a former member of the FAO Panel of Experts on Emergency Action against the Desert Locust. Mr. Cavin was co-director in development of the PEA, reviewer of the OTA Report, both of which are referred to in this evaluation.
- **Roger Popper,** Team Leader: a social and management scientist, and expert in project evaluation and institutional analysis. Recently Dr. Popper did an evaluation of the impact of pesticide management training on the knowledge and beliefs of farmers and housewives in Guatemala, and published an article on the evaluation in the *Environmental Management* journal.
- **Bob MacAlister:** an expert in institutional analysis and training. Due to health problems, Mr. MacAlister could not travel with the team, so his participation in the evaluation was limited.

4. The Report and the Findings-Conclusions-Recommendations Model

Much of report uses the well-known *findings-conclusions-recommendations* model. Findings refer to data and evidence. Conclusions refer the significance, generalizability and causal explanation for findings. Recommendations refer to suggestions for future action based on the conclusions. The *conclusions* are the "bridge" in the model between findings (and other evidence) on the one hand and recommendations on the other. Recommendations are gathered together in one final strategy and action plan chapter.

Discussion with the USAID/Africa Bureau on several occasions has given the impression that the approach to using this evaluation is to simply accept the recommendations that make sense and reject those that do not. The team invites USAID to use the entire analysis in this evaluation to generate strategies and recommendations of which the evaluation team has not thought. Evaluators can never know everything about a project that implementers and managers know about it, nor can they be privy to the entirety of USAID objectives and policy.

Technical Notes

1. To conserve space in this report we use l/g to include all the Acrididae, that is all species of locusts and grasshoppers, whether in the singular or as a whole. The evaluation is limited almost entirely to the primary species on which AELGA has focused: the migratory grasshopper, *Oedaleus senegalensis* and the Desert Locust, *Shistocerca gregaria*. The evaluation does not attempt to evaluate AELGA activities according to each of the several migratory grasshoppers and locusts within AELGA's sphere, though there are often decided differences among them, such as primary habitat, phase transformation and migratory tendencies.
2. In various discussions of the report, the plague of 1985-1989, and the upsurge of 1992-1994 are referred to. Other reports and references use the dates 1986-1989 and 1992-1993. We chose the more encompassing set of dates because:
 - a. In the summer of 1985, an USAID-contracted Swiss entomologist reported substantial build up of *Oedaleus senegalensis* and Desert Locust in Northwestern Mali. Also Skaf (FAO) reported gregarious Desert Locust breeding in the southern Tahama of Saudi Arabia in November and December, and considers 1985 the beginning of the plague.
 - b. Gregarious locusts were still present in parts of Mauritania and southeastern Senegal, and further south, into early 1994.
 - c. It might even make sense to further extend the 1992-1994 period to 1995, as gregarious locusts have been reported for Chad, Sudan, Eritrea, Mauritania and Senegal during 1995.
3. Mention of the pesticide dieldrin in the evaluation also refers to other chlorinated pesticides including aldrin, chlordane, BHC (HCH), Lindane, toxaphene, and mirex, etc.

II. OVERVIEW OF AELGA OBJECTIVES, INVESTMENTS AND ACTIVITIES

A. AELGA Background and History

Major infestations of locusts and grasshoppers in Africa generally occur following the return of rains after extended periods of drought. The severe drought of the early 1980s was followed by normal or above normal rains in 1985 and 1986 which resulted in major locust/grasshopper infestations.

Largely in response to this crisis the Africa Emergency Locust/Grasshopper (AELGA) Project (698-0517) was authorized in April 1987 with a LOP funding of \$15 million. Since the original authorization, there have been ten amendments to the project and the LOP funding level now stands at \$46,035,000. AELGA was originally scheduled to be completed in FY 89. The current PACD is April 2, 1997.

A project evaluation conducted in 1989 concluded that: AELGA was not yet successful at facilitating long term management and control of pests and recommended more emphasis on training and building the capacity of national crop protection services. The evaluation noted that disaster response activities had interfered with project management focus on longer term institutional building activities. The evaluation offered recommendations in a variety of areas including long term actions for locust infestation forecasting, institution building and research.

B. AELGA's Current Focus

1. Changes in Objectives

Since 1989 the AELGA project has attempted to put OTA and evaluation recommendations, especially those with long-term implications, into practice. The latest restatement of the project purposes is found in amendment number six of December 8, 1992 and provides for:

- short term technical assistance, *medium term capacity building* to alleviate and manage the grasshopper/locust threat;
- response mechanisms for "*other emergencies*" that may arise in Africa.

For in-depth discussion of AELGA design and changes that have occurred, see Chapter III of this report.

2. Changes in Geographic and Substantive Focus

Initially AELGA interventions focused on the Sahel. Since 1993 AELGA has been giving increased attention to locust control in East Africa where many locust plagues begin. AELGA has also been encouraging other donors to give increased attention to East Africa.

As the project evolved and was amended, AELGA responded to other types of crop protection emergencies such as rodent outbreaks. AELGA was also involved in a USAID/Office of Foreign

Disaster Assistance (OFDA) led New World Screwworm Eradication program in North Africa. The project has also responded to outbreaks of pests outside Africa in the Near East and Asia.

During its short history, AELGA's official objectives have changed. Changes apparent *in project documents* over time are:

- from reaction to l/g plagues toward proactive approaches to preventing plagues;
- from western Africa where l/g plagues have seldom originated toward eastern Africa and the Arabian peninsula where l/g plagues more often originate;
- from massive, episodic investment toward continuous investment;
- from massive pesticide use toward Integrated Pest Management (IPM) and bio-control;
- from intuitive decision making to use of economic thresholds to guide l/g management investments;
- from unilateral approaches to collaborative approaches involving several donors.

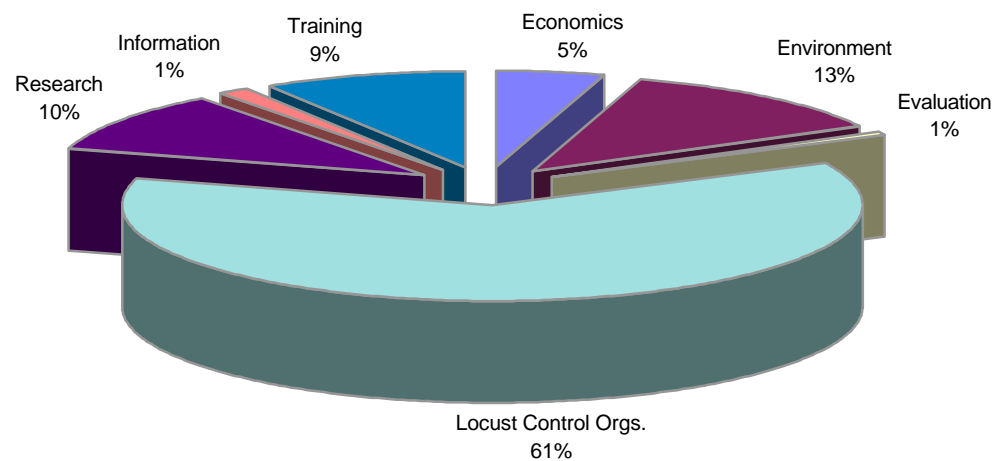
C. Profiles of AELGA Investments

As preliminary tasks in preparation for assessment of project progress, the evaluation Scope of Work asks for: 1) an overall review of project activity; and 2) aggregates of resources spent. Appendix A of this report contains a detailed break-down of AELGA investments by activity, country, date and implementation mode. The following paragraphs present summaries of investments as presented in Appendix A and other project documentation.

Table II-1 gives a rough expenditure break down and shows that of the approximately \$32,000,000 total:

- 61% went for emergency support;
- 13% went for environment;
- 10% went to researchers on bio-control pesticides and on developing economic thresholds for l/g interventions; and
- 9% went for training.

AELGA - BREAKDOWN OF OBLIGATED FUNDS



D. Profiles of Principal AELGA Activities

1. Donor Collaboration

There is currently considerable focus on the need for donors and host countries to work together to develop host country capacity for preventive and proactive intervention. The donor collaboration effort is described as follows by AELGA staff

Donor Group at the Food and Agriculture Organization (FAO): AELGA has been very influential in formulating an informal donor group now composed of the U.S.A., UK, Sweden, Norway, France, the Netherlands, Germany and Canada. The donor group has managed to instigate FAO to develop EMPRES, to develop a study on the economic impacts of locusts and the cost of campaign scenarios and to improve their information dissemination capabilities. Donor consensus is brought to the larger FAO fora. e.g., Desert Locust Control Commission (DLCC), the Technical Group for the DLCC and the Emergency Prevention System (EMPRES) planning meetings. As a result, the formal FAO meetings are now much more productive than in the past. Elusive consensus is generally reached and momentum for carrying on defined activities is generated. Largely because of AELGA's strong influence at FAO meetings, the locust affected countries invited three donor representatives to become part of the Technical Group of the DLCC. Allan Showler, Technical Advisor to AELGA, was asked to be on the Technical Group of the DLCC. (AELGA Activities 1992-Present: Thumbnail Sketch. pp. 1,2)

2. Emergency Assistance

Emergency Assistance was concentrated during the 1985-1989 infestation and also took place during an infestation in 1992-1994. Assistance was provided throughout the region, with particular efforts in Niger, Mali, Mauritania and Senegal. In the following paragraphs, emergency assistance efforts during the 1986-1989 and 1993-1994 periods and in Niger and Madagascar are described.

1986-1989

The 1986-1989 desert locust campaign exemplifies the *reactive approach*, but it is generally not adopted by choice. In 1986-1989, an inability to effect early control in key breeding areas along the Red Sea coast permitted large scale swarm development, migration and breeding in other regions without disruption until a full blown plague had developed. (*Proaction: Strategic Framework for Today's Reality*. Showler, 1995. p. 4)

1993-1994: Africa and the Near East

During 1993 and 1994 AELGA funded l/g control operations in Niger, Mali, Mauritania, Sudan, Somalia, Ethiopia, Eritrea and Senegal and worked with a combination of farmers, national crop protection agencies and international organizations including the Desert E Locust Control Organization (DLCO) and the Maghrebien Strike Force. In all, 14 countries in Africa and the Near East were involved in the effort. Control operations were

initiated quickly against outbreaks relative to the 1986-1989 campaign. Success in the 1993-1994 effort as compared with the 1986-1986 effort has been a major argument in favor of USAID continued support of AELGA.

1989-1984: Niger

Since 1989 AELGA, in collaboration with strong efforts from other donors, has made great strides in improving Niger's national capacity to launch effective, organized and environmentally sound crop protection efforts. Niger's crop protection program has significantly increased its capability to conduct adequate survey and control in recent years. Also, approximately 34,600 farmers in village brigades were trained as Niger's first line of defense against pest infestations. AELGA's funding in the past six years has virtually sustained Niger's aerial survey and control operations. It has also provided the necessary fuel for ground survey and control operations, essentially built the entire communication network and contributed to the expertise level through training. (*The Niger African Emergency Locust/Grasshopper Assistance (AELGA) Project Evaluation*. AELGA, June, 1994.)

1992-1993: Madagascar

AELGA and USAID/Madagascar, through a resident locust control coordinator, provided assistance to the crop protection service and helped the crop protection service to conduct survey and control of locusts, particularly during the outbreak of 1992-1993. Between 1992 and 1993 alone, USAID/Madagascar's AELGA Project funded more than 310 flight hours for helicopters, 187 flight hours for fixed wing spray aircraft and 241 flight hours for fixed wing survey aircraft. (AELGA reaction to the draft evaluation report.)

3. Pesticide Management

The Dieldrin Prohibition: During the 1986-1988 locust upsurge, U.S. law prohibited USAID from participating in programs where the highly toxic pesticide dieldrin was used. Since USAID financial contribution was essential to the 1986-1988 effort, other donors had to comply, most willingly, some not so willingly (France) and hence l/g control and prevention efforts throughout Africa were changed forever.

The Panos Institute Dossier titled, *Grasshoppers & Locusts: the Plague of the Sahel*, (published with AELGA funds) says:

"There is no longer any debate over the use of dieldrin, but the way in which the decision to discontinue was taken remains a sensitive issue. Donors, with USAID taking the lead, simply stated that they would not supply it or support activities connected with its use." (p.58)

Triangulation

AELGA describes its pesticide triangulation program as follows:

Under its *triangulation* program, AELGA has funded pesticide disposal in Tanzania (Zanzibar) and packaging and shipment to an incinerator in the Netherlands. A precedent has been set for North African countries to donate overstocks of viable, USAID-approved pesticides to Sahelian countries in immediate need of them. AELGA pays for the shipping cost and FAO arranges for the logistics. This initiative began with Morocco and since then, Tunisia and Algeria have also voluntarily made donations. This not only reduced overstocks in North Africa, it also facilitated early control in the Sahel in the interest of preventing swarms from arriving in North Africa.

Pesticide Testing

AELGA tested pesticides in Gambia to determine their viability for use — the insecticides were found to be viable and could, therefore, be used for locust and grasshopper control before additional stocks needed to be ordered.

4. Supplemental Environmental Assessments

Over the life of the project, AELGA has carried out or been instrumental in the development of more than 20 Supplemental Environmental Assessments (SEAs), whose objective is to tailor the Programmatic Environmental Assessment (PEA) to the needs and situations of individual countries and programs. AELGA staff describe the SEA effort as follows:

The SEAs provide background about the topic, describe control tactics and alternative tactics that are available, explore logistics and the organization of control, offer recommendations on how to mitigate or prevent problems that might negatively impact upon the environment and humans. SEAs are done at the request of the USAID missions of the host country government. (AELGA reaction to the draft evaluation report, p. 51).

Since 1992, SEAs have been completed in Eritrea, Ethiopia, Tanzania, Mozambique, Madagascar, Yemen, Somalia, Kenya, Botswana and the Gambia. In addition, an amendment to the SEA for Madagascar was prepared to include the use of insect growth regulators, SEAs in Ethiopia and Eritrea were expanded to include armyworm control and the SEA for Mauritania was rewritten.

5. Training of Crop Protection Personnel in L/G Prevention Approaches

A March 1995 AELGA report on a training program held in Eritrea noted that between 1987 and 1992, over 500 people had been trained by AELGA. Additionally, the report noted that thousands were also trained by FAO, the Organization Commune de Lutte Antiacridienne et de Lutte Antiaviare (OCLAV) and the U.S. Geological Survey (greenness maps) at events funded at least in part by AELGA. Training has focused on locust, grasshopper and rodent control. The training is designed to enhance host country ability to survey, treat and control locust and grasshoppers.

Specific subjects have included safe handling of pesticides and effective spraying techniques. There was also some training of farmer brigades in West Africa.

Since 1994, AELGA has been carrying out training programs in East and Southern Africa which focus on crop protection agents at the central, regional and field level. To date this training has been offered in Eritrea, Ethiopia and Botswana. A training program for farm leaders will soon take place in Eritrea. AELGA is also providing teaching supplies and training material for these sessions. A l/g control manual in Tigrigna, the language of Eritrea, has been produced.

6. Biological Control Research

In an effort to reduce pesticide use, AELGA has expended more than \$3.5 million for grasshopper/locust biological control research projects through Montana State University (MSU) since July 1989.

MSU has been working in collaboration with MYCOTECH, a Montana based firm, which specializes in the development and production of fungi for biological control. The research is designed to decrease the dependency of host countries on chemical pesticides for pest management. Research activities have been carried out in Cape Verde, Madagascar and Mali. The research includes looking at fungi that kill locusts without causing adverse environmental impacts. Feasibility studies have been conducted for mass production of biopesticides in Madagascar. A new MSU/MYCOTECH research effort is being planned for Eritrea.

MSU has also been involved with training technical staff in providing laboratory equipment and facilities, conducting laboratory trials, and establishing communications within and between host country institutions and collaborating organizations. Small scale production of fungal spores has been initiated in Madagascar and Mali.

AELGA is developing a special training activity concerned with the biological control of grasshoppers and locusts. One or two trainees have been selected to attend from countries in East Africa and the Middle East. It will be offered at the International Centre for Insect Physiology and Ecology in Nairobi, Kenya.

7. Economic Threshold Research

AELGA has financed research by Oregon State University and the Consortium for International Crop Protection to develop computer software for undertaking cost-benefit analysis which could be used as a tool for making decisions involving intervention with pesticides against outbreaks of grasshoppers/locusts. It compares the cost of treatment with the cost of projected crop loss. The cost/benefit analysis modeling software developed in 1987, is known as the Sahelian Grasshopper/Locust Crop Loss Simulation, or GHLSIM. A model has been developed and tested in Chad and some follow-up work was carried out by the International Plant Protection Center between 1989 and 1992.

8. Publications/Awareness Campaign

AELGA generates many publications which make up its "awareness" program. Publications include articles in scholarly journals, *Front Lines*, chapters for books and support to publication of technical manuals through other donors, the PANOS Institute and FAO. The latter includes helping to produce and distribute tens of thousands of copies of educational materials on locust control and prevention to host country crop protection services across Africa.

III. EVOLUTION OF AELGA PROJECT DESIGN, BUDGET AND CONCEPTS

A. Evolution of the AELGA Project Design and Budget

1. The Project Paper Logical Framework

AELGA'S Project Paper Logical Framework was built around the goal, purpose and outputs listed below.

Goal: Improved nutritional status of Africans by reduction of locust/grasshopper plague-induced famine and related socio-economic/social suffering

Purpose: To treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests and help to establish improved management and control mechanisms.

Outputs:

- Research technologies
- Trained Africans
- Improved Pest Management
- Controlled Pest Situation
- Better Early Warning System
- Pest Threat Elimination

Comments on the Original Project Paper Logical Framework

The AELGA Project Paper Logical Framework is perfunctory and was probably meant to be developed further in the course of the project. To start with a skeleton Logical Framework and then elaborate on it as project evolves is an acceptable procedure, as long as the elaboration occurs, *which in the case of AELGA it did not*. Some specific comments on the original Project Paper Logical Framework are:

Goal: it is to be questioned whether locust/grasshopper plagues lead to famine, although they certainly lead to socio-economic suffering and probably do impede recovery from drought-induced famine.

Purpose: it is not clear what the word "rehabilitation" in the purpose means or ever meant. AELGA work in pesticide disposal may fit.

Outputs: the outputs in AELGA's original Logical Framework are especially perfunctory and were further elaborated in the project paper, the USAID-AELGA Action Plan and in AELGA reporting documents. An attempt at characterizing Outputs as they have evolved is presented in Table III-1.

Table III-1

EVOLUTION OF AELGA PROJECT OUTPUTS

PROJECT PAPER OUTPUTS (LogFrame plus supporting list 1987)	USAID (AELGA) ACTION PLAN (1987)	AELGA REPORTING CATEGORIES, TOPICS (1995)
Country Development Plans USAID Action Plan (1987)	This items listed in this column are the crux of the USAID/AELGA Action Plan	EMPRES (Emergency Migratory Pest Prevention System-FAO)
Early Warning System	Provide <i>early</i> warning through monitoring of potential pest problems in individual countries	Greenness,vegetation mapping Mitigation of environmental hazards
Trained Africans Develop and implement training programs Institutional support	<i>Train and develop a host country human resource base</i> that can help reassert, and subsequently, maintain control of the threat posed by locusts and grasshoppers	Awareness program Preparedness: host country ability to monitor l/g Emergency Response: host country ability to survey, control l/g
Research technologies Research in biologicals	Support <i>adaptive research</i> needed to take advantage of recent advance in pest identification, survey, early warning, and control technologies.	Research on biological, botanical control Awareness program Academic publications
Pest Survey Assessment	Provide needed <i>resources</i> (technical), financial and material) for timely and efficient (and cost effective) pest survey and control activities,	Surveys
Environmental Studies	Surveys that fully take U.S. environmental concerns and legislation into account;	Supplemental Environmental Assessments
Pest Threat Elimination Ground control operation Aerial control operation		Control Operations Pesticide contributions, Pesticide triangulation Pesticide disposal
Coordination with FAO	Encourage neighboring countries to plan and agree on cross border control operations	Networking, donor coordination Desert Locust Coordination Commitee (DLCC)
Contracts to develop reliable evaluation data	Establish <i>standards and criteria</i> for determining when and where to apply strategies for control of the pests	Collaborative effort with EMPRES Economic threshold research

2. Restatement of Project Purpose

The latest restatement of the project purposes is found in Amendment # 6 of December 8, 1992 as follows:

- to provide short-term technical assistance and training to help alleviate the immediate grasshopper/locust threat to food security in Africa;
- provide *medium-term capacity building* to help bring about improved and *sustainable management* of grasshopper and locust outbreaks threatening African countries; and
- to provide a response mechanism for *other emergencies* that may arise in the Africa region.

As the italicized phrases show, the 1992 restatement of project Purpose in Amendment # 6:

- solidified the idea that AELGA's job was to help Africans keep l/gs under control and not only react to l/g plagues; and
- extended AELGA's mandate to cover emergencies other than l/g.

3. Evolution of Project Budget and Responsibilities

AELGA project budget and responsibilities evolved through a series of ten Amendments as inventoried in Table III-2, which were supported by the evaluations inventoried in Table III-3.

- 3/17/87: A Project Paper was prepared whose Logical Framework, objectives, indicators and feasibility analysis were perfunctory. The principal objective was disaster assistance and the project completion date was 9/30/90.
- In 1989-90 an evaluation by Tropical Research and Development (TR&D) and (whose team included a USAID entomologist who is now Senior Technical Advisor of the AELGA/RSSA team) concluded that: 1) AELGA is remarkably successful in achieving its first purpose, to combat the current locust outbreak; and 2) AELGA has been less successful to date in achieving its second purpose, to effect those measures that will facilitate the longer term control of plagues. The evaluation team made a number of recommendations based on the above conclusions, including institutional development for national crop protection services.
- 12/9/92: Through Amendment #6, \$3,425,000 increased the planned obligation to pay for permanent AELGA staff and the project purpose was extended to cover medium-term management of l/gs and emergencies other than l/g, in particular armyworms.

- 8/25/93: Through Amendment #8, \$11,580,000 was obligated to reach until 12/31/94 and concluded that:
 - 1) ". . . the project successfully conjoined emergency and development components under one umbrella"; 2) "no new project design is needed"; 3) an internal assessment recommends "continuation of a redesigned AELGA that focuses on proactive interventions"; and 4) "prevention of l/g plagues costs less than disaster assistance." In a sense, Amendment #8 serves the function of a Project Paper for the last three years of the AELGA project.
- 6/30/94: Through Amendment #9 the project completion date was extended from 12/31/94 until 3/2/97 without a new Project Paper, new project design, or a new Logical Framework. Most of money obligated through Amendment #8 was still unspent.

In summary, AELGA is a development project that has been allowed to play by the flexible rules necessary during disaster assistance efforts. It would seem that USAID has given AELGA extraordinary special dispensation based on the justification that: 1) "AELGA successfully conjoins disaster assistance and development"; and 2) "plague prevention costs less than disaster assistance."

4. Evolution of the Role of National Crop Protection Units

a. The AELGA Project Paper Position on National Crop Protection Units

The 1987 AELGA Project Paper considered and rejected institutional development of national crop protection services as follows:

"The recommended locust/grasshopper control program, plus the long term *institutional development of national plant protection service: this approach has been considered and rejected for two inseparable reasons*. First, the process of trying to carry out the institutional development of national plant protection services has been attempted many times by many donors. Given their destitute financial position, the host countries just can't afford the recurrent costs consequently generated. *Thus, such activities are of low priority in most USAID Country Development Strategy Statements.*" (Alternative 'e' in a discussion of alternatives. p. 36,37)

b. The 1990 Mid-Term Evaluation Position on National Crop Protection Units

The 1990 evaluation by TR&D recommended institutional development of National Crop Protection Services as follows:

This evaluation team (TR&D) strongly supports institutional development of the national crop protection services for locust control, particularly in agricultural areas. The team believes that, if the locust problem abates in the near term, much project attention should be directed toward institutional development, which involves training

Table III-2

AELGA AMENDMENT INVENTORY

Date	Document	LOP	Changes
3/17/87	Project Paper	\$14,000,000	Project Completion 9/30/90 See Logical Framework above
6/11/87	Amendment #1	\$760,000	Early warning system Extend to 11/8
11/19/87	Amendment #2	\$3,260,000	Early warning system Extend to 12/31/8
7/26/88	Amendment #3	\$550,000	Extend project to 12/31/90 Rodent control
6/5/90	Amendment #4	None	Extend project to 12/31/92
9/30/92	Amendment #5	\$2,500,000	Extend project to 12/31/93 Cover Madagascar
12/8/92	Amendment #6	\$3,425,000	RSSA/USDA/OICD position Short term TA Donor coordination Buy-ins with bilateral missions
3/31/93	Amendment #7	\$1,760,000	Quick response mechanism
8/25/93	Amendment #8	\$11,580,000	Expanded project Purpose Extend project to 12/31/94 Mostly for emergency fund FAO fund Some RSSA TA
6/30/94	Amendment #9	\$9,200,000 of \$45,800,000 unspent	Extend project to 3/2/97 On the basis of evaluation, new design declared unnecessary
9/30/94	Amendment #10	\$200,000	Disaster fund
TOTAL LOP		\$46,035,000	

Table III-3**INVENTORY OF AELGA PROJECT EVALUATIONS**

Date	Document	Internal/ External	Recommendations
1989	Mid-Term Evaluation	Mixed	Move toward preventive- development approach Institutional strengthening for National Crop Protection Services
1989	TAMS/CICP	External	Numerous, primarily focusing on pesticide management
1993	Assessment of AELGA	Internal	Recommended proactive approach, Extension of project
6/94	Evaluation of support to Niger	Mixed	Continued USAID support of Crop Protection Service
7/95	Evaluation of Biological Control Research	Internal	Regional management Competitive bidding Longer term contracts Accelerate field trials Make contractors accountable

in a wide range topics, as well as some construction, particularly for safe pesticide storage areas. The team also supports the formation of farmer brigades for local action and recommends strongly that AELGA begin to deal with this important aspect of locust control." (*Africa Emergency Locust/Grasshopper Assistance (AELGA) Mid-Term Evaluation*. Tropical Research and Development, 1990. p.14.)

It appears that institutional development of National Crop Protection Services, which was specifically eliminated in the Project Paper, became a focus of AELGA on the basis of an evaluation recommendation unaccompanied by thorough analysis of feasibility, recurrent costs and long term implications.

The failure of donor-supported national agricultural extension agencies to solve agricultural problems is arguably the most distressing aspect of USAID's and other donors' efforts. It is the evaluation team's view that any project which proposes to "buck this trend," must do very careful analysis and have a good argument why "it will be different this time."

5. Is AELGA Becoming a Regional Pest Control and Crop Protection Project?

With Amendment #6 on December 9, 1992, AELGA's operational arena expanded to include armyworms, rodents and other pest problems. With this step, AELGA took on the aspects of prior USAID sponsored programs such as the Regional Insect Control Project and the Food Crop Protection Project with USDA, which also grew out of an original intent of l/g control.

A major difference appears to be the operational philosophy. While the Regional Insect Control Project and Food Crop Protection Project both had their technical direction in the field and technical personnel assigned within individual Missions, AELGA has staff in Washington, D.C., and provides technical support on a temporary basis. By increasing staff activity in myriad additional pest problems, AELGA risks diluting its capability to succeed in its area of original intent, l/g control.

AELGA's armyworm control effort: It has been suggested that AELGA expansion to include armyworms within its purview is a step forward. From a technical point of view this may be true, but from the point view of building sustainable African pest management mechanisms the conclusion may be different. The problem of armyworms was first addressed by the UK, which eventually turned the problem over to DLCO-EA and now AELGA has taken over. It is not at all clear that taking on the armyworm challenge, after it has been passed from another donor to an African organization represents progress.

6. Monitoring and Evaluation

Without a thorough, up-to-date Logical Framework, or an equivalent project design, systematic monitoring and evaluation are impossible. As far as the evaluation team can tell, the only progress with regard to formal design is that presented in Table II-1 which categorizes Outputs, but establishes no indicators, or targets.

The 1987 Project Paper treatment of monitoring and evaluation for AELGA is as follows:

"... a serious professional effort must be made during the life of the project to develop reliable data against which the various interventions and activities of the project can be evaluated and from which economic judgements can be made. For example, at what level of infestation should intervention begin, of what type, how intensively, where in order to protect what, etc. The selection of a contractor to develop and implement a system for answering some of these questions will be an early implementation activity of the project." (p. 34)

A contract to establish economic criteria for evaluating l/g control has been let, but practical tools do not seem to have resulted (the evaluation team has asked for reports, but not seen any).

The task outlined in the above paragraph is not easy. It is, however, the evaluation team's opinion that it is too central to project management to be entrusted to a contractor and left undone since 1987. The project should always be using interim evaluation tools while waiting for the perfect approach. Someone on AELGA staff should have the background for working on the agricultural economics of l/g control and spend a large percentage of work time on it.

7. A Development-Disaster Assistance Hybrid

	DISASTER ASSISTANCE	DEVELOPMENT PROJECT
Quick response with little systematic management	ACCEPTABLE 1 YEAR MAXIMUM	AELGA
Off the shelf plan		
Long term effort based on analysis, strategy, objectives, indicators and work plans		ACCEPTABLE 5 YEAR STAGES

CHART 1: Hybrid Project Model

Before AELGA there were two models for investing in the project: 1) disaster assistance and 2) development project. The latter is designed to operate over the medium term and requires (theoretically at least) thorough analysis, strategy, objectives, indicators and work plan approval regarding compliance with the strategy. The former is designed for efficiency over the short-term and development project management tools are dispensed with. With AELGA, a new hybrid project model has been invented, as shown in Chart 1 above, which combines a long time period with the special dispensation accorded disaster assistance efforts.

The lesson here is: You can't have it both ways. You can't at the same time be a disaster project and have special freedom, but be a long term development project and not play by the development project rules.

B. Conclusions

■ Special Dispensation for AELGA

In the 1987 Project Paper there was no serious analysis of economic, technical and institutional feasibility. There is, at present, no systematic feasibility analysis of the AELGA strategy as it has evolved since 1987.

During the eight year period there has been no new Project Paper or Logical Framework, little in the way of success indicators, no truly external evaluations, no audits and (until recently) no formal procedure where the Africa Bureau approves work plans and their relation to AELGA and USAID objectives.

Institutional development of National Crop Protection Services, which was specifically eliminated in the Project Paper, became a focus of AELGA on the basis of an evaluation recommendation unaccompanied by thorough analysis of feasibility, recurrent costs and long term implications.

Through expansion to include addressing problems with armyworms and other pests, AELGA may be evolving into being a regional insect and pest control project. Such a broadening of scope may dilute l/g control efforts (as has happened with other projects in the past). Also taking on the armyworm challenge, after it has been passed from UK to DLCO-EA and then to AELGA, is not necessarily a step forward.

In summary, AELGA is a development project that has been allowed to play by flexible rules similar to those reserved for disaster assistance efforts. It would seem that USAID has given AELGA extraordinary special dispensation based on the justification that: 1) "AELGA successfully conjoins disaster assistance and development"; and 2) "plague prevention costs less than disaster assistance."

C. Recommendations

■ Principles

- AELGA is an eight-year old development project, and should, therefore, use and abide by USAID development project management tools and procedures;
- All decisions of a strategic nature must be approved and signed off on by USAID/DRC. Long-term commitments of USAID money and prestige, without full USAID/DRC understanding and official approval must be avoided.

■ **Tools and Systems**

- A Logical Framework should be developed which describes AELGA's current strategy and objectives. The Logical Framework should attempt performance indicators for the various l/g control subsystems (early warning, national crop protection units, research, etc.).
- Yearly work plans should be approved and signed off on by USAID/DRC. The main criterion for approval is clear contribution to the objectives of: 1) reducing the frequency and size of l/g plagues; 2) reducing the damage done by l/g plagues; and 3) reducing expenditure on disaster assistance.

D. Evolution of L/G Control and Management Concepts

The AELGA project design, as it appears in the Project Paper and Amendments to the Project Paper, is built around general concepts of how to reduce the locust/grasshopper threat. During the course of the project the concepts and phrases have been elaborated on and made more precise. General concepts and phrases which occur in AELGA official planning documents are as follows:

- alleviate the grasshopper/locust threat (purpose in Amendment # 6);
- improved and sustainable management of grasshopper and locust outbreaks threatening African countries (Amendment #6);
- measures that will facilitate the longer term control of plagues (TR&D evaluation);
- improved management and control mechanisms (Project Paper purpose).

Elaboration and definition of l/g management and control concepts can be divided into the following three phases:

- definition of the term "prevention";
- assessment of the feasibility of "prevention"; and
- development of the "proaction" concept.

Characterization of the above three phases is based on AELGA documents and articles and by articles written by other professionals working in the locust-grasshopper field.

1. A Definition of "Preventive Control" put forth by AELGA

Preventive: Ideally, locust control should occur at the onset of gregarious behavior when locusts have amassed in small patches, no more than several meters in diameter, in breeding areas. Success likely would require that a critical, but not yet determined, proportion of these patches be controlled. Plague prevention will involve continuous, extensive locust surveys, including searches for egg pod fields and repositioning

of resources and conceivably rely on IPM tactics to hold populations in recession indefinitely. (*Locust Orthoptera: Acrididea Outbreak in Africa and Asia, 1992-1994: An Overview. American Entomologist*. in press. p. 5)

2. The Feasibility of "Preventive Control"

On the one hand, a grasshopper-locust control strategy meeting sponsored by FAO in 1987 concluded in favor of a "preventive control" of locusts, but not of grasshoppers, as follows:

It will probably never be a viable option to conduct large-scale campaigns against grasshoppers well away from cropping areas, . . . in every year there will be crops lost to grasshoppers. There is ultimately no solution to the problem: the problem will not go away.

The strategy against Desert Locust is survey and preventive control, that is to permanently intervene to destroy populations which are becoming gregarious. The strategy is international and aims at preventing plagues, not at protecting crops. In spite of the vast areas which must be covered, preventive control of the Desert Locust therefore, costs much less than grasshopper control.

While it is impossible to entirely wipe out grasshoppers, the gregarious Desert Locust populations naturally group themselves and form good targets, which can be totally destroyed. This means that even a full-scale campaign against the Desert Locust will cost less than the systematic large-scale control of grasshoppers. (*Evaluation of the 1987 Grasshopper Campaign in the Sahel: Organizing an Emergency Campaign against Grasshoppers and Locusts*. FAO/Rome, 8 and 9, December 1987.)

On the other hand, there are theorists who conclude that preventive control of locusts is not feasible:

Theoretical (population dynamics) considerations: Theoretical considerations of hopper band control suggest that achieving sufficient impact on total locust numbers is unlikely at reasonable costs if non-persistent contact insecticides are used and given the vastness of the infested areas (*Desert Locust Control with Existing Techniques and Evaluation of Strategies*. Wageningen Agricultural University, p. 27; Courshee, 1990; Symmons, 1992).

Security problems are preventing surveys: In the last ten years alone, at one time or another it was impossible to conduct surveys in (all or parts of): Somalia, Ethiopia/Eritrea, Sudan, Chad, Niger, Mali and Mauritania. These countries contain the most important breeding areas of the Sahel zone. Right now it is virtually impossible to carry out surveys in northern Mali because of conflicts between the central government and Tuareg rebels and in Niger they can only be conducted with a military escort. It is almost completely impossible to collect data in Somalia, despite the fact that critical breeding areas are situated in that country. (*Desert Locusts in Africa — a Disaster?* Stefan Krall, XXII International Conference of Agricultural Economists, 22-29, 1994, Harare, Zimbabwe, p. 3)

3. Proactive Control: A More Feasible Approach

AELGA's logic has been that since "prevention" is not feasible at present, a less ambitious, more realistic approach called "proaction" must be adopted. "Proactive control" is defined in AELGA documents as follows:

Proactive: The word proactive means early intervention to mitigate or avert further development of a problem. In the context of locusts, proaction entails control operations that are conducted against outbreaks (geographically localized swarm development) before plague status is reached. Proaction relies heavily on early detection of locust aggregations in breeding areas and strategic prepositioning of resources. Without

empirical intervention threshold levels, timing of intervention is determined through a blend of estimated gregarizing locusts, a local capacity for control, experience, intuition, gestalt and political pressure. (*Proaction: Strategic Framework for Today's Reality*. Showler, p. 5.)

... Though EMPRES is an acronym for Emergency Prevention System, it will actually facilitate, coordinate and catalyze *proactive* desert locust control until such time, if ever, true outbreak prevention can be achieved. For now, proactive control is the only practical strategic framework available; exploration for tactics should aim at safely, effectively and efficiently locating and controlling locust within a dynamic and flexible program tailored to meet diverse scenarios. (ibid, p. 6)

4. The Difference between Proaction and Prevention

Proaction, as compared to prevention, seems to have the following features.

- a call to action;
- a flexible strategy;
- attack locust later in the breeding cycle, after they have gregarized and formed swarms, but before they cause agri-economic damage;
- give up for the time being on trying to reduce l/g populations permanently; and
- evolution toward "preventive control" that is, toward reducing l/g populations permanently.

With the coining and definition of the term "proaction," AELGA has added another term to the following already crowded field:

- plague prevention, plague suppression;
- upsurge prevention, upsurge elimination;
- outbreak prevention, outbreak suppression;
- strategic control, preventive control; and
- crop protection.

All of the above terms are defined differently. (*Desert Locust Control with Existing Techniques and Evaluation of Strategies*. Wageningen Agricultural University, pp. 119-126). "Proaction" would seem to resemble "plague prevention" the most. According to the aforesaid volume, "plague prevention" consists of two approaches:

- upsurge prevention: to control by whatever means are available, all gregarizing or gregarious infestations; or
- upsurge elimination: to control at a late stage of gregarization when most locusts are in large dense targets and the area infested has diminished. (p. 126)

5. Is "Proaction" Different from L/G Control Practices Since 1962?

In 1990 or 1991, in a paper entitled, *International Locust Control: Strategy, Structures, Needs and the Role of FAO*, Lucas Brader, former Chief of Plant Production and Protection Division, FAO and also Director of the Emergency Center for Locust Operations, (ECLO/FAO) characterized the strategy which suppressed plagues between 1962 and 1987 as follows:

The present strategy for all species (of locusts and grasshoppers) is to monitor populations in the relatively restricted seasonal breeding areas and to undertake preventive control if populations gregarize. The strategy is elegant and simple and in general terms has been very successful in that, *until 1987*, there has been no new plague of locust in Africa since 1962.

The definition of "proaction" put forth by AELGA seems quite similar to the above description of the pre-1987 strategy. Is there an important difference between the two and what is it? It is not clear what important difference there is between "proaction" and the strategy followed between 1962 and 1987 and which led up to the 1985-1989 plague.

The book, *Desert Locust Control with Existing Techniques*, also describes the approach *during* the 1986-1989 period as follows:

The preferred strategy during the 1986-1989 campaigns was to attempt the prevention of upsurges by surveying potential breeding areas and spraying gregarized or gregarizing locust populations. Upsurges nevertheless developed and the next step was to attempt elimination of the upsurge by tracing bands and swarms which were then controlled wherever and whenever possible. Crop protection was carried out where bands or swarms had entered cultivated areas. (P. Gruys, p.25)

A FAO Strategy Proposed in 1991: Further, it is not clear how "proaction" corresponds to and differs from, the following strategy proposed for FAO by Lucas Brader in 1991. The strategy was proposed specifically as an antidote to the approach that led up to the disastrous 1985-1989 plague.

Components of the Brader strategy were:

- strengthening of regional operations so they can assist national units;
- strengthening of national units to enable them to deal with local locust outbreaks;
- continued research on locust surveying, multiplication and gregarization rates, remote sensing, improved ground and air control techniques;
- better telecommunications links; and
- establishment of buffer stocks and application equipment at key locations;

6. Is the Proactive Approach Feasible?

Because prevention approaches to l/g are not considered feasible, AELGA has adopted a less ambitious, more realistic approach called "proaction." Now the question becomes: is proaction feasible? To be feasible, "proaction" need not reduce locust/grasshopper populations permanently. But, to be feasible, proaction must show promise of significantly reducing the frequency and size of l/g plagues and the agricultural and economic damage done by them.

The evaluation team has been able to find no serious feasibility analysis of the proactive approach. Statements in AELGA documents regarding the probability that "proaction" can reduce the size, frequency of l/g plagues and the damage done by them are provided below.

Proaction, if given committed support by locust affected countries, donors and international organizations — and if false expectations do not cause premature disenchantment — *should help* to alleviate the locust threat to crop protection and *ultimately* contribute toward the reduction of localized crop failure in regions chronically beset with drought, poverty, pestilence and famine. . . Coordinated strategic control, whether using selective synthetic pesticides or non-chemical tactics, *would effectively eliminate large-scale crop protection spray campaigns against locust in North Africa.* (*Desert Locust Plagues in North Africa: Environmental Protection and Human Safety*. Showler, p. 31)

It is important to know what more can be concluded regarding the feasibility of "proaction" beyond:

- proaction *should help* to alleviate the locust threat to crop protection and ultimately contribute toward the reduction of localized crop failure; and
- coordinated strategic control *would effectively* eliminate large-scale crop protection spray campaigns

The same questions that were asked of prevention must also be asked of proaction. Prevention was considered not feasible for detection, swarm mobility, security and theoretical (population dynamics) reasons. How does proaction respond to those very same obstacles so that there is promise in the foreseeable future that the frequency and size of l/g plagues and the damage done by them will be reduced?

7. L/G Population Dynamics: Inexorable Arithmetic

Before asking whether "proaction" is feasible in practical terms, it must be asked whether "proaction" is feasible in theoretical terms. To be feasible in theoretical terms, "proaction" must show promise of dampening the extraordinary population dynamics during l/g builds and "break the cycle."

Some provocative quotes regarding l/g population dynamics are presented below. The first three quotes are from a book titled, *Desert Locust Control: an Evaluation of Strategies* and report the proceedings of a seminar held in Wageningen, The Netherlands, 6-11 December, 1993.

The main lesson to be learned from the 1986-1989 Desert Locust campaigns is that there is an urgent need for a carefully considered, generally adopted control strategy. Such a strategy is currently not available and should be drafted as a matter of urgency. This can only be done *by investigating the relative theoretical merits of possible control strategies, using model calculations to compare their inputs and effects on overall population numbers.* (p. 29)

Theoretical calculations may give some indications about the feasibility of plague prevention by chemical control. For example, the population would increase in five generations without control and with a multiplication rate of 10 (rate suggested by Roffey to occur during upsurges), then the population would increase in 5 generations from 10 to 10 to the sixth times. *By controlling 90% of the locusts at each generation the population would remain at the same level.* (p. 13.)

These theoretical calculations show that with a multiplication rate of 5, *plague prevention is only possible when insecticides are able to kill more than 80% of the target.* This assumes that virtually all the hopper bands need to be sprayed and Gruys (1991) argues that such a coverage is practically impossible. Chemical

control at high multiplication rates of the Desert Locust would then only slow down the development of a plague but not suppress it. (p. 27)

Over the course of a year during three generations, a desert locust population has a potential to increase over the range of x 343,000 to x 5,832,000 depending on proportion of females surviving to lay 2 or more pods. (*Prospects for Biological Control of Desert Locust — Schistocerca gregaria*. Farrow, 1986)

The point here is not that the above figures or quotes are correct. The point is that "proaction" has been proposed as a feasible approach to reducing, not only the economic damage done by current l/g infestations, but also reducing the size and frequency of future l/g infestations and the damage done by them.

E. Conclusions

■ The Evolution of L/G Control Concepts

A definition of "proaction" is not a strategy, but rather an idea that might become a strategy. Components of a strategy include: objectives, success indicators, principals of operation, decision criteria, etc.

From a management point of view, the questions which a strategy must answer are:

- how can you tell when the strategy is being followed and not being followed;
- how can you tell if the strategy has succeeded or failed? and
- have we changed ends or just means? If both, how and how much of each?

It is not clear what important difference there is between "proaction" and the strategy followed between 1962 and 1987 and which preceded the 1985-1989 plague.

■ The Technical and Theoretical Feasibility of AELGA

The technical-theoretical feasibility of "proaction," in particular with regard to l/g population dynamics seem not to have been analyzed. To reduce plagues and their damage, "proaction" must break the "population build up cycle" of l/gs.

Literature and the experience of the entire l/g control effort, suggest that to reduce the frequency and size of major plagues, proaction must kill a very high percentage of l/gs, while they are multiplying very fast, over wide areas and not just once but over successive generations.

F. Recommendations

■ L/G Control Concepts

- AELGA should develop and formalize a strategy based on the definition of "proaction." The raw materials for the strategy are all around and can be found,

for example, in AELGA's training materials. Focus should be on the specific problems, places and phenomena that gave rise to the 1985-1989 plague, the 1992-1994 outbreak, the 1995 outbreak, and the outbreak in Madagascar.

- It must be made clear how to tell when "proaction" is and is not happening and how to distinguish between success and failure.
- AELGA should explain the difference between "proaction" and the strategy used between 1962 and 1985.

■ **The Theoretical and Technical Feasibility**

- Concentrate the intellectual resources of AELGA on testing and proving the feasibility of "proaction" in relation to the "inexorable arithmetic" of $1/g$ population dynamics before plagues. For example, how does the "proactive" approach propose to:
 - reduce the population sufficiently so that those remaining revert to solitarious state?
 - reduce the population sufficiently so that upon maturity no more than a few will reach suitable locations for successful breeding and survival of progeny?
 - reduce overall locust population in wide areas in excess of 90%? (or whatever number AELGA selects or is comfortable with.)
- In arriving at real estimates of control rates over generations of locusts, it must be realized that in 1995 we are working with: a) pesticides with shorter residual action than the formerly used chlorinated hydrocarbon pesticides; and b) less effective regional organizations now that support of the regional organizations by both national governments of Africa and donors has wilted.

IV. AELGA ACHIEVEMENT OF GOAL AND PURPOSE LEVEL OBJECTIVES

A. Readjustments to the Project Paper Logical Framework

1. The Logical Framework Goal and Purpose

Goal and purpose level objectives, as they appear in the AELGA Project Paper Logical Framework, are as follows:

Goal: Improved nutritional status of Africans by reduction of locust/grasshopper plague-induced famine and related socio-economic/social suffering.

Purpose: To treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests and help to establish improved management and control mechanisms.

The evaluation Scope of Work (SOW) stipulates that the AELGA Logical Framework be used to organize this evaluation report. The AELGA Logical Framework does not represent the AELGA project accurately according to accepted standards nor does it describe the project accurately, so the requirement is difficult to comply with without some adjustments.

Table IV-1 presents a "parsing" of the Logical Framework Goal and Purpose statements, inserts some missing elements that must be included for acceptable evaluation of the AELGA project and to facilitate writing of this chapter and divides the elements into those which are "inside and outside the project logic."

2. Elements of the Goal and Purpose that Are Outside the Project Logic

The objectives, "treat recovery and rehabilitation aspects of problems created by l/g pests" and "reduce famine" are neither integral to the project logic, nor are they treated in this chapter. The former objective (treat recovery and rehabilitation aspects) is only part of AELGA from the "pesticide disposal" point of view and is treated in Chapter V among the "outputs." The latter objective (reduced famine) is not integral to project logic because l/g plagues are probably not an important cause of famines. Although l/g infestations do lead to socio-economic suffering, they are not thought to lead to famines per se. L/g plagues come at the end of droughts and probably tend to impede recovery from famines rather than cause them.

3. Goal and Purpose Level Elements that are within the Project Logic

The "within project logic" part of Table IV-1 organizes the goal and purpose elements (and necessary elements from outside the Logical Framework as well) according to an approximate cause-effect relationship, with causes at the bottom and effects at the top, as follows:

- improved management and control mechanisms lead to l/g infestations controlled;
- l/g infestations controlled leads to reduced spending on disaster assistance; and
- l/g infestations controlled leads to reduced social and economic suffering, which includes improved nutritional status.

4. Project Elements that Are Not in the Logical Framework, But Should Be

Note that the objectives "l/g infestations controlled," and "Reduced spending on disaster assistance" are described in Table IV-1 as:

- "Not in the Logical Framework," but also:
- "That is what this project about;"
- "Basic to AELGA's justification;"
- "The central topic in this chapter;" and
- "Addressed in this chapter."

Obviously there is a serious mismatch between the Project Paper Logical Framework on the one hand and the essence of AELGA and what needs to be covered in this chapter on the other. The mismatch is a direct result of AELGA starting with a perfunctory Logical Framework in 1987 and not doing a re-analysis until the time of this evaluation in late 1995. At the goal and purpose levels, the original AELGA Logical Framework is not a sufficiently developed tool for organizing and guiding evaluation.

B. Project Paper Treatment of Evaluation at the Goal and Purpose Levels

With regard to evaluation of AELGA at the goal and purpose level, page 34 of AELGA's 1987 Project Paper says:

... a serious professional effort must be made during the life of the project to develop reliable data against which the various interventions and activities of the project can be evaluated and from which economic judgements can be made.

A contract to establish economic criteria for evaluating l/g control was let, but practical evaluation tools have not resulted to date.

AELGA documents which come closest to evaluating AELGA at the purpose and goal level are:

- articles written by AELGA for publication in scientific journals; and
- Amendment #8, approved in August of 1993, which increased AELGA's LOP by \$11,580,000.

Table IV-1

PARSING OF ELEMENTS FROM THE AELGA PROJECT PAPER LOGICAL FRAMEWORK

OBJECTIVE	RELATION TO AELGA LOGICAL FRAMEWORK	EXTENT ADDRESSED IN THIS CHAPTER
PART OF PROJECT LOGIC		
Reduced socio-economic suffering	Part of Goal	Not addressed No data
Improved nutritional status	Part of Goal	Not addressed No data
Reduced Spending on Disaster Assistance	Not in the Logical Framework, but basic to AELGA's justification	Addressed in this chapter
L/G infestations controlled	Not in Logical Framework but this is what the project is about	The central topic of this chapter
Improved management and control mechanisms	Purpose	Really an overarching comment about Outputs Treated in a following chapter
NOT PART OF PROJECT LOGIC		
Reduced Famine	Part of Goal	Not addressed Maybe irrelevant
Treat recovery and rehabilitation aspects of problems created by l/g pests	Purpose Not part of project, except pesticide disposal	Not addressed Pesticide disposal included under "Outputs"

A common focus for AELGA's scientific articles and Amendment #8 is comparison of achievement of purpose and goal level objectives by:

- the "reactive" approach used to control the 1985-1989 plague that covered much of Africa; and
- the "proactive" approach used to control the 1992-1994 upsurge.

C. Scientific Articles Comparing the 1985-1989 and 1992-1994 L/G Management Efforts

In scientific articles by AELGA staff, comparison of the 1985-1989 "reactive" approach and the 1992-1994 "proactive" approach is presented as follows:

The possible impacts of interventions during the 1986-1989 and 1992-1994 desert locust campaigns should be compared. . . *Though the intrinsic impact of the interventions in 1993-1994 is unclear*, the outbreak did begin in the same region as the 1986-1989 plague and it was generally believed that countries in the desert locust's plague distribution should prepare for a prolonged campaign unless interventions were rapid and effective. . . *it is conceivable* that early interventions played a crucial role in mitigating a potentially explosive magnification of the outbreak. *As a possible result*, the number of hectares treated and the cost of the 1992-1994 campaign (4 million hectares, \$19 million from donors) were notably less than those of the 1986-1989 campaign (25 million hectares, \$300 million from donors). (*Proaction: Strategic Framework for Today's Reality*. Showler, 1995 pp. 5,6.)

Control operations were initiated quickly against outbreaks relative to the 1986-1989 campaign (OTA, Showler and Potter 1991) and localized outbreaks mostly subsided within 1-2 generations. *While climactic factors (Steedman) played significant roles in modulating the dynamic of the 1992-1994 outbreak at the regional scale, it is possible that control operations made important contributions toward containing the outbreak at the local level.* The outcome of the 1992-1994 locust control campaign provided enough incentive for FAO, locust-infested countries and donor countries to seriously consider supporting a plan for an early intervention level program against desert locust to be centered in the Red Sea region. *Locust (Orthoptera: Acrididea) Outbreak in Africa and Asia, 1992-1994: An Overview. American Entomologist.* Fall 1995, p. 183)

Note that in the academic articles, suggestion of a cause-effect relationship between: 1) AELGA's "proactive" approach during the 1992-1994 upsurge; and 2) aversion of a major plague on the scale of 1985-1989 is made tentatively. When addressing a scientific audience, AELGA qualifies the cause-effect relation with phrases of caution such as: "though the intrinsic impact of the interventions in 1993-1994 is unclear"; "it is conceivable"; and "as a possible result."

D. Use of the 1985-1989 vs. 1992-1994 Comparison to Allocate Resources

1. Amendment # 8 to the AELGA Project Paper

In the final analysis, the function of evaluation at the purpose and goal level of a project is to explain why a project is or is not worth the resources invested in it and make budget and length-of-project decisions.

The document which comes closest to explaining why AELGA is worth the investment is Amendment #8 which was approved on August 25, 1993. Amendment #8 serves the function of Project Paper for the last three years of the AELGA project in the sense that:

- the planned obligation was increased by \$11,580,000;
- it was concluded that no new project was needed; and
- through Amendment #9, the project was extended more than two years from 12/31/93 to 3/2/97.

With regard to comparison of advantages and disadvantages of the "reactive" and "proactive" (or preventive) approaches used to combat the 1985-1989 and 1992-1994 upsurges, Amendment #8 says:

During the 1986-1989 locust plague. . . donors spent \$300 million to protect crops; USAID donated over \$60 million of this following disaster declarations in nineteen countries. In contrast, the economic and environmental costs of taking a *preventive approach* are far lower. (Evaluation Team Comment: the \$300 million figure included expenditures by affected governments as well as by donors.)

In early 1993, significant locust outbreaks occurred along the Red Sea coast of Eritrea and Sudan (exactly where the 1986-1989 plague began). Early interventions supported by the AELGA Project *helped to avert the onset of a full-scale locust plague* through rapid positioning of locust survey and control materials.

2. AELGA's Justification for FAOs EMPRES (Emergency Prevention System)

In favor of the EMPRES program, the same argument is made as in Amendment #8, but in even more direct terms:

Early intervention against developing locust outbreaks is very likely to avert not only the plagues themselves, but the environmental and financial costs of conducting widespread campaigns in Africa and Asia. For example, the 1986-1989 campaign cost donors about \$300 million to protect crops against a full-blown plague and approximately 25 million hectares were sprayed with conventional pesticides. In contrast, during 1992-1994, relatively early intervention against a locust outbreak of the same magnitude and in the same geographic location. . . cost the donors only \$18 million and about 4 million hectares were sprayed - it is likely, too, that the spray campaign conducted during 1992-1994 had a much greater impact on curtailing the outbreak than the much larger campaign did during 1986-1989. (AELGA, 1995 Plan of Work, p. 17)

3. Different Interpretations for Scientific and USAID Audiences

Amendment #8 to the AELGA Project Paper and AELGA's justification for FAO's EMPRES program comes close to saying that: 1) AELGA prevented the 1992-1994 upsurge from becoming a disaster on the scale of the 1985-1989 plague and 2) by investing in AELGA, disaster assistance expenditures on a 1985-1989 scale (\$300 million overall and \$60 million by USAID) had been avoided. At the very least, it is very easy, on the basis of the language in Amendment #8 and in the EMPRES justification, for a USAID decision-maker to get the impression that the AELGA has prevented a major plague and has saved major disaster assistance expenditure by USAID.

A progress report entitled, *AELGA Activities 1992 — Present: Thumbnail Summary*, is less subtle and states outright that: "Funded control operations in Niger, Mali, Mauritania, Sudan, Somalia, Ethiopia, Eritrea and Senegal in 1993-1994: **plague averted**." Why is the cause-effect relationship between AELGA activities and plague prevention or aversion described cautiously for a scientific audience of experts (AELGA's scholarly articles), but not cautiously at all in documents for decision-makers with less scientific information at their disposal, but with important resource allocation decisions to make?

E. Evaluation Team Assessment of the AELGA Project Achievement of its Purpose and Goal Level Objectives

1. Points of Agreement between AELGA and Evaluation Comparison of the 1985-1989 and 1992-1994 Infestations and Interventions

Based on his own personal observation of both the l/g infestations and through review of documents, the evaluation team entomologist concurs with AELGA that:

- a. expenditure to combat the 1992-1994 infestation was magnitudes smaller than for the 1985-1989 infestation;
- b. the 1992-1994 upsurge required spraying of less hectares than did the 1985-1989 plague;
- c. during the 1992-1994 infestation controls undertaken with AELGA support protected crops and avoided economic loss to farmers;
- d. the controls *may have* been partially responsible for the demise of the 1992-1994 upsurge.

To concur in the above, however, *is not* the same as concurring that:

- a. without "proaction" the 1992-1994 upsurge would have developed into a major plague; and
- b. comparison of the 1992-1994 and 1985-1989 interventions measures the superiority of former intervention over the latter or of "proactive" approaches over "reactive" emergency assistance approaches;
- c. the 1992-1994 approach represents a significant improvement over control strategies applied during the 1985-1989 period.

2. Reasons Why Comparisons between the 1985-1989 Plague and the 1992-1994 Plague Are Misleading

According to the evaluation team's analysis, important reasons why comparison of management of the 1995-1989 plague and the 1992-1994 upsurge is unwarranted and misleading are as follows:

- The 1985-1989 and 1992-1994 investments cannot be compared because the latter built on a massive accumulation of pesticides, equipment, trained people left behind by the former.
- There is no certainty that the 1992-1994 infestation was on its way to becoming a plague of 1985-1989 proportions because:
 - evidence suggests that there was no true recession between the earlier plague and the later upsurge; and
 - the 1992-1994 upsurge added no new l/g species to the 1985-1989 mix (except in Madagascar).

Some detail on reasons why comparison of the 1985-1989 and 1992-1994 interventions and infestations are misleading is presented below.

■ The 1992-1994 Effort Built on Pesticides, Equipment and Trained People Left Behind by the 1985-1989 Effort

The 1992-1994 control effort was appreciably aided by the pesticides, equipment and trained people left behind by the 1985-1989 campaign. FAO, in the midst of the 1985-1989 campaign observed:

"At the end of two years of emergency, Plant Protection Services have probably received *more supplies and equipment than they have in the previous 20 years*. This is an enormous capital to which must be added the human capital, the tens of thousands of farmers trained and the national plant protection technicians trained on the job and at special seminars in the region and abroad. The task now and the role of the donors, is to build on what has been gained. If this is done, any future upsurge will be much more easily combatted." (FAO Technical Meeting, Dec.8-9, 1987.)

The above comment regarding the capital investment left behind by the 1985-1989 effort means that comparisons of the 1985-1989 and 1992-1994 investments are not warranted, because to a large extent the latter investment builds on the former and is incremental to it.

■ There May have Been No True Recession Between 1989 and 1992

There may have been no true recession between 1989 and 1992 because:

- Though the 1992-1994 upsurge is referred to as a new upsurge, historically plagues have lasted for years until natural conditions come into existence to push the insect into recession status.
- Although drought conditions existed in some parts of the Desert Locust recession area between 1989 and early 1992, they were not continuous throughout.
- Near the end of the 1986-1989 plague, hopper bands were observed in Djibouti and in May of 1989 and the same observer reported:

" . . . rapid increase in the numbers of immature swarms in southern Mali, Burkina Faso and south-west Niger. The main concern is now to be on the alert for the start of *a change of events which could, if unchecked, lead to the resurgence of the plague.*" (Skaf. FAO, 1989.)

Many of the known high frequency breeding areas could not be adequately surveyed due to hostile action; such as the northern coast of Somalia, the Red Sea coastal areas of Eritrea, northern Ethiopia and northern Mali, Niger, Chad and Mauritania. (Arguably the most important reason in this list.)

For the above reasons, there is a likelihood that gregarious locusts were still present but undetected between the 1984-1989 plague and the 1992-1994 upsurge. Perhaps the 1992-1994 upsurge was a continuation of the 1985-89 plague, analogous to the aftershock of an earthquake and the aftershocks will continue until natural factors, usually wide-spread drought, force the pest into recession. Perhaps the 1989-1992 period, rather than a true recession, was simply a low cycle in the plague.

■ **The 1992-1994 Upsurge Added No New L/G Species to the Mix (Except in Madagascar)**

If the 1992-1994 upsurge were merely an aftershock of the 1985-1989 plague, then species making up the earlier plague would encompass the species making up the later upsurge.

The species making up the 1985-1989 plague were the migratory grasshopper (*Oedaleus senegalensis*) throughout the Sahel, the Desert Locust, African Migratory Locust, Red Locust, Tree Locusts, Moroccan Locusts and Brown Locusts in southern Africa.

Species making up the 1992-1994 upsurge which overlapped with those in the 1985-1989 plague, were Desert Locust, African Migratory Locust and Tree locust. In 1992-1994, no problems arose with *Oedaleus senegalensis*, Red and Brown Locusts and the Moroccan Locusts. To the 1985-1989 list, the only 1992-1994 addition was the Malagasy Migratory Locust, which suggests that the upsurge in Madagascar may well have been new.

In sum, the species overlap between the 1985-1989 plague and the 1992-1994 upsurge is consistent with a theory that the 1992-1994 upsurge was not new, although it does not eliminate the possibility of a new upsurge which by coincidence adds no grasshopper or locust species.

■ Some Arguments Which Led Nowhere

Topics raised during the debate about the comparability of the 1985-1989 plague and the 1992-1994 upsurge, which led nowhere are: the geographic origins of the infestations and escapes of 1992-1994 l/gs to the sea or the tropics. Similar geographic origins for the two infestations has been used: 1) by AELGA to argue that the second infestation was a *new repetition* of the first; and 2) by the evaluation team to argue that the second infestation is an *aftershock* of the first. Escapes by 1992-1994 l/gs to the sea or the tropics have been used by the evaluation team to argue that l/g control did not cause the demise of the upsurge; however the AELGA team argues that l/g escapes do not preclude effective control efforts.

3. Another Point of View

"... we certainly do not regard the 1992/93 locust activities as an example of preventive control. In fact the locust situation in Eastern Africa deteriorated in late 1992 and early 1993 due to unpreparedness and security problems in Eastern Africa. The upsurge eventually spread through migrating locusts to India/Pakistan and to West Africa. These events were a strong motivation for FAO to start its EMPRES programme in 1994." (FAO reaction to the draft evaluation)

The logic appears to be as follows: 1) the 1992/93 effort was not prevention; 2) therefore, the EMPRES was started; 3) EMPRES is going to do "proaction" not prevention (see previous section); 4) 1992/1993 is a good example of "proaction" and the justification for recent USAID investment in AELGA. So are we back where we started and promoting what we wanted to get away from? The evaluation team does not want to engage in semantic argument. Since 1993 more than \$10,000,000 was invested in AELGA, largely (if the documents are right) on the merits of "proaction." The resource implications of these interpretations of data appear significant.

F. Conclusions

■ Specific to Comparison of the 1985-1989 and 1992-1994 Plagues

The evaluation team agrees that:

- During the 1992-1994 upsurge, controls undertaken with AELGA support protected crops and avoided some agri-economic damage; and
- AELGA-supported controls *may have* been partially responsible for the demise of the 1992-1994 upsurge.

However:

- Comparing the 1985-1989 and 1992-1994 investments is inappropriate and misleading, because the latter smaller investment built on the former larger investment in pesticides, equipment and trained people.
- There is evidence indicating:

- lack of a l/g recession between the compared upsurges; and
- lack of new l/g species introduced by the second upsurge.

Hence it is questionable that the 1992-1994 upsurge would have developed into a full-blown plague without AELGA's "proactive" efforts; and that the 1992-1994 proactive measures taken avoided disaster assistance expenditure.

G. Recommendations

- The burden of proof that AELGA's "proactive" strategy in 1993-1994 avoided a plague and also disaster assistance expenditure, lies with AELGA. The project has used the argument to obtain resources and very special dispensation (a long-term development project run according to short term disaster assistance's more flexible guidelines).
- AELGA should be encouraged to be as rigorous and cautious in drawing cause-effect conclusions regarding the effects of its efforts when communicating with USAID managers as when communicating with the scientific community.
- To facilitate further USAID support, AELGA should remove doubt that "proactive" efforts not only reduce agri-economic damage, but also prevent full-blown plagues. The analysis must recognize that: 1) the 1992-1994 and 1985-1989 investments are not comparable, but rather build on each other; and 2) "proaction" will not always have a large previous investment on which to build.
- A useful tool would be a discovery procedure or epistemology for determining with some probability whether upsurges are plagues in the making. Obviously if such a tool is impossible, then maintaining that a plague has been prevented, as AELGA has done is problematic.

Suggested Advice to USAID Managers

- The costliness of reaction to plagues is not sufficient justification for investment in prevention or proaction. The proaction must show promise of preventing or reducing the seriousness of plagues for the investment to be worth it.
- Large plagues are relatively rare occurrences and most outbreaks and upsurges would not become plagues even if left alone.
- Therefore, caution is required in assuming, without sound proof, that lack of plagues, or damage from plagues, means that plague prevention (or proaction) has been effective.
- Decision-making based *solely* on internal evaluations, analyses and articles may prove faulty in the medium and long-term.

V. ACHIEVEMENT OF PROJECT OUTPUTS

The outputs in AELGA's original Logical Framework are perfunctory and were elaborated on in the project paper, the USAID-AELGA Action Plan and in AELGA reporting documents. An attempt at characterizing outputs as they have evolved is presented in Table III-1. In this chapter, material on AELGA outputs is organized as follows.:

- A. Training and Institutional Strengthening
- B. L/G Control and Management Mechanisms
 - 1. Pesticide and Environmental Management
 - 2. Early Warning and Monitoring
 - 3. A Mix of Ground and Aerial Operations
 - 4. The Eritrea Upsurge in September, 1995
- C. Research and Publications
 - 1. Bio-Control Research
 - 2. Economic Threshold Research
 - 3. Awareness Program and Publications

No attempt is made here to follow a formal Logical Framework or contractual definition of "outputs." What this chapter is about is "things AELGA is doing that lead to the control and management of l/g infestations."

A. Training in Proactive L/G Control

In AELGA planning and reporting documents, the concept of training in proactive techniques to control l/g has evolved as shown in the table below.

PROJECT PAPER OUTPUTS (LogFrame plus supporting list 1987)	USAID (AELGA) ACTION PLAN (1987)	AELGA REPORTING CATEGORIES, TOPICS (1995)
Trained Africans Develop and implement training programs, Institutional support, <ul style="list-style-type: none"> • 300 formally trained • 1500 informally trained 	Train and develop a host country human resource base that can help reassert and subsequently, maintain control of the threat posed by locusts and grasshoppers	<i>Preparedness</i> : host country ability to monitor l/gs <i>Emergency Response</i> : host country ability to survey, control l/gs

Chart 2: Training in Proactive Techniques

1. Training During Plagues and Upsurges

During the 1985-1989 l/g plague and the 1992-1994 upsurge, AELGA trained more than 500 extension agents and farmers. Thousands were also trained by FAO, OCLALAV and the U.S. Geological Survey (greenness maps) at events funded at least in part by AELGA. Training has focused on locust, grasshopper and rodent control. The training is designed to enhance host country ability to survey, treat and control locust and grasshoppers. Specific subjects have included safe handling of pesticides and effective spraying techniques. There was also some training of farmer brigades in West Africa.

2. AELGA's Current Training Approach

Since 1994, AELGA has been carrying out training programs in East and Southern Africa which focus on crop protection systems at the central, regional and field level. To date this training has been offered in Eritrea, Ethiopia and Botswana. AELGA is also providing teaching supplies and training material for these sessions. The program follows a three stage model of training: 1) Crop Project Service staff; 2) extension agents; and 3) farmers. The training provided has been enthusiastically received and been praised by government officials from the ministerial to field extension levels.

The training in proactive control of l/gs offered by AELGA seems to be a solid and professional job in terms of content, process and learning. The course contains much "proaction" material and also material on bio-control. Training topics are: 1) monitoring and identification; 2) choice of control method; 3) environmental ramifications; 4) safe use of control; 5) follow up on effects; 6) disposal of dangerous control substances; and 7) research and testing of new methods.

3. Training in Biological Control

Training courses such as the Biological Control training course at the International Center for Insect Physiology and Ecology (ICIPE) are necessary to acquaint upper and mid-level l/g control technicians and Crop Protection Services managers on the relatively new world of biological (and botanical) pesticides and their possible utility as the likely control tools of the future.

If biologicals (and botanicals such as sesame) prove efficient and cost-effective, their use will represent a new way of life for the l/g control professionals and it may take time for them to adapt. Many l/g professionals cling to the belief that control is no longer possible since the ban on dieldrin use. The adoption of biological (and botanical) innovations may require a new generation of locust fighters unburdened by beliefs from the past.

In the meantime, care must be taken that the concept of preventive control does not disappear. While waiting for the new methods to become effective and for recipients to accept them and become proficient in their use, USAID and other program managers and donors may become discouraged.

B. Conclusions

- When taken on its own, AELGA's training program seems to be doing a good job teaching agents, extensionists and, perhaps, farmers in "proactive" l/g control techniques. That is, the agents, extensionists and farmers are probably learning "proaction," and within limits of their resources putting into practice what they learn.
- However, examination of the training program in connection to AELGA's overall objectives, gives rise to some doubts. The evaluation team questions (as explained in much of this report) whether: a) "proaction" as currently defined and promoted; and b) carried out by national crop protection services as currently constituted, can reach the AELGA's overall objectives.

By "AELGA's overall objectives" is meant significant reduction in: a) The frequency and size of major l/g plagues; b) the agri-economic and social damage caused by the plagues; and c) large expenditures on disaster assistance for combatting plagues.

- In another context, with other overall objectives (crop protection against small and medium-sized upsurges for example), the conclusion might be different. But the fact of the matter is that AELGA was not created and given special dispensation to merely protect crops and perhaps shorten small and medium l/g upsurges.

To formulate recommendations regarding training and institutional development for national crop protection services, it is necessary to view the training in a broader context, as is done in Chapter V, Part C.

C. L/G Control and Management Mechanisms

1. Pesticide and Environmental Management

a. A Request by Congress: with regard to pesticide problems, the 1990 Congressional OTA report posed the following questions to USAID:

- What has been the U.S. role in poor pesticide use (including site selection, storage, application and disposal)?
- What obligations — legal, ethical and political — does the U.S. have to help correct such problems?
- How much might those efforts cost and how is USAID preparing, with other donors and African governments, to meet them?
- How is USAID addressing insecticide storage and disposal problems resulting from previous locust/grasshopper control efforts? What monitoring is underway for longer term health and environmental effect? (OTA Report, p. 90)

b. Pesticide and Environmental Management in AELGA Documents

In AELGA planning and reporting documents, the concepts of environmental and pesticide management have evolved as shown in the following table.

PROJECT PAPER OUTPUTS (LogFrame plus supporting list 1987)	USAID (AELGA) ACTION PLAN (1987)	AELGA REPORTING CATEGORIES, TOPICS (1995)
Environmental Studies	Surveys that fully take U.S. environmental concerns and legislation into account	<ul style="list-style-type: none">• Environmental Concerns• Report• Supplemental Environmental Assessments• Pesticide Contributions• Pesticide Triangulation• Pesticide Disposal

Chart 3: Evolution of AELGA Planning Documents — Environmental and Pesticide Management

c. The AELGA Approach

AELGA efforts in promoting rational management of pesticides have included:

- USAID refusal to finance l/g control and prevention efforts which include dieldrin as well as other chlorinated hydrocarbon pesticides;
- pesticide transfers from countries with excesses to countries with needs (triangulation, see Table V-1);
- promoting pesticide disposal and storage arrangements; and
- Supplemental Environmental Assessments.

d. The Dieldrin Prohibition and Triangulation (for descriptions see Chapter II)

AELGA's renunciation of dieldrin and the triangulation strategy are commendable programs which may have set precedents to address future problems with excess l/g pesticides. They do not, however, address the issue of l/g pesticides from previous control campaigns that through leakage etc. are slowly contaminating many African locations. Emergency action does not imply that responsibility ends upon application of the last plane load of pesticide. It continues until all the ills of the program are resolved. AELGA should have basic responsibilities in the disposal of old, unused or unwanted pesticides and pesticide containers that until now have not been fully addressed, particularly that which may be related to a program participated in by USAID.

Table V-1**PESTICIDE TRANSFERS FUNDED BY USAID****1993 — 1995**

PROJECT	PESTICIDE	QUANTITY (Litres)	FROM	TO	COST (U.S. \$)	DATE
YEAR 1993						
ECLO/SUD/031/USA	Malathion	20,000	Morocco	Sudan	30,000 (by air)	Oct. 1993
YEAR 1994						
ECLO/SUD/031/USA	Malathion	20,000	Morocco	Sudan	11,500	Jan. 1994
ECLO/SUD/036/USA	Malathion	20,000	Tunisia	Mauritania	10,000	Dec. 1994
ECLO/SUD/031/USA	Karate	20,000	Algeria	Mauritania	8,000	Dec. 1994
GCP/INT/603/USA						
YEAR 1995						
GCP/INT/603/USA	Dursban	20,000	Algeria	Mauritania	9,000	Mar. 1995
GCP/INT/603/USA	Penitrothion	25,000	Morocco	Mauritania	9,000	Aug. 1995

e. Pesticide Disposal

A serious environmental problem for all of Africa is pesticide disposal. A typical example is the Gonderand pesticide storage facility outside Asmara in Eritrea which is a disaster in the making as it is wide open to the world. The fumes from leaking drums, including the smell of dieldrin, in the old dilapidated building are very strong. Most of the materials stored there were recanted in the early 1970s into used but sound empty drums from the 1968-70 locust upsurge. They were never satisfactorily re-labeled so the actual contents are unknown. It is supposedly the property of DLCO-EA but no one seems to lay claim to it now. If it is the property of DLCO-EA and it is malathion, it is likely that at least some of it was purchased with USAID funds and according to the USAID L/G Management Guidebook and the PEA, responsibility for proper storage lies with USAID project management (AELGA). Similar locations to Gonderand exist throughout the l/g invasion areas of Africa and the Middle East. (see *Final Evaluation of the USAID/Morocco Locust Control Project and Republic of Guinea-Bissau Food Crop Protection Project Final Evaluations.*)

f. Supplemental Environmental Assessments

Regulation 22 CFR Part 16 specifies procedures by which environmental consequences of USAID financed activities are to be identified and considered prior to project implementation. The USAID Pest Management Guidelines define the conditions under which USAID will participate in pest management activities in developing countries. This includes l/g control. To fulfill its obligation USAID requires that an inventory of all critical habitats and endangered areas be made before beginning any project that includes pesticide use. This inventory is documented as a Supplemental Environmental Assessment (SEA). The SEA's are to be updated periodically and policy refined as new information becomes available. AELGA appears to have abided by this requirement. SEA's have even been developed in some nations in anticipation of future action. Over the life of the project, AELGA has carried out or been instrumental in the development of more than 20 SEAs (see Table V-2), whose objective is to tailor the PEA to the needs and situations of individual countries and programs.

g. Country Level Observations (Eritrea, Madagascar, Mali)

Eriterea: AELGA has done an SEA for Eritrea with strong emphasis on pesticide storage. In response to the SEA these results can be noted.

- Two storage facilities were built near Asmara in response to AELGA's Eritrea SEAs. Both are converted Eritrean People's Liberation Front barracks that were ventilated, provided with concrete flooring and wooden pallets, painted and locked in a secure area. Pesticides are consolidated there, not in the run-down facility pointed to in the report. Contrary to the report, the stocks in the dangerous room that was described were not moved there as part of any nation-wide consolidation effort. (AELGA response to draft evaluation, p. 33)

Table V-2

**LIST OF COUNTRIES FOR WHICH AELGA DEVELOPED
SUPPLEMENTARY ENVIRONMENTAL ASSESSMENTS (SEAs)**

COUNTRY	DATE COMPLETED	DATE AMENDED
1. ALGERIA	01/89	
2. BOTSWANA	10/94	
3. BURKINA FASO	04/91	
4. CAMEROON	04/91	
5. CHAD	04/91	
6. ERITREA	03/93	11/94
7. ETHIOPIA	06/93	11/94
8. THE GAMBIA	11/93	
9. INDIA*	11/93	
10. KENYA	11/93	
11. MADAGASCAR	07/92	09/93
12. MALI	05/91	
13. MAURITANIA	06/91	03/95 (Revised)
14. MOROCCO*	04/88	
15. MOZAMBIQUE	09/93	
16. PAKISTAN*	08/93	
17. SENEGAL	05/91	
18. SOMALIA	11/93	
19. SUDAN	10/90	
20. TANZANIA	07/95 Pending Approval	
21. TUNISIA	12/88	
22. YEMEN	11/93	

* AELGA was instrumental in the development of these SEAs.

A Mistake by the Evaluation Team: AELGA's reaction to the report also correctly says that:

The warehouse visited by the evaluation team (and referred to earlier in this section) . . . was NOT the pesticide storage facility at all. They visited the equipment storage shed across town, but failed to know the difference. It is important to note that significant report conclusions were based upon this error. (AELGA response to draft evaluation, p. 33).

The reason the evaluation team committed this error is that, due to an l/g upsurge in Eritrea, no one familiar with the AELGA project, was available to guide the evaluation team. Through taxi drivers and other sources, the evaluation team tried to find the new pesticide disposal facility, but obviously did not. The team, nevertheless, did observe *old pesticide storage that needs immediate attention*.

Mali: In June 1995 Mali adopted a package of laws against storing, transporting or using pesticides or pest infected material. The laws at least theoretically impose heavy fines and prison sentences and similar laws have been passed by neighboring countries. The laws are at least partially the result of the 1986-1988 experience with l/g control and pesticides. AELGA's role in this is not clear to the evaluation team, but may be substantial. In 1992 and 1994 AELGA built two pesticide warehouses in Mali.

Madagascar: In Madagascar a major disposal problem has been resolved through GTZ assistance. A quantity of 43,000 l. of Dieldrin in rusted, leaking drums has been repackaged and shipped to England for destruction at a cost of some \$200,000. Some small disposal problems still exist in Madagascar, but its strong environmental and pesticide legislation is instrumental in making it one of the very few nations in Africa without a serious pesticide disposal problem. The stored pesticides do not represent a surplus and will be used soon. Apparently GTZ manages Madagascar's use and storage of pesticides carefully.

USAID/Madagascar has a strategic objective and activities directed at preserving natural areas and an SEA was done with emphasis on keeping pesticides out of natural eco-systems.

2. Early Warning and Monitoring

In AELGA planning and reporting documents, the concepts of early warning and monitoring regarding locust and grasshoppers has evolved as shown in the table below.

PROJECT PAPER OUTPUTS (LogFrame plus supporting list 1987)	USAID (AELGA) ACTION PLAN (1987)	AELGA REPORTING CATEGORIES, TOPICS (1995)
Operating, Better Early Warning System	Provide <i>early warning</i> through monitoring of potential pest problems in individual countries	Greenness, vegetation mapping Mitigation of environmental hazards

Chart 4: Evolution of AELGA Planning and Reporting Documents — Early Warning and Monitoring

If AELGA's efforts at proactive approaches to l/g control are to succeed, then full advantage must be taken of recent technological developments in the area of early warning and monitoring regarding l/g outbreaks and upsurge and the conditions conducive to them. Modern early warning and monitoring programs have at their disposal: meteorological data, satellite vegetation indexing, remote sensing, computerized Geographical Information Systems (GIS) ecological modeling, and of course, field verification.

a. Description of Progress

A description of progress developing l/g monitoring and warning systems is presented below. A *more meaningful evaluation* would require testing or probing of early warning and monitoring performance in terms of coverage, rapidity of turn-around, accuracy, user-friendliness and, above all, utility in making decisions regarding proaction and prevention efforts. Such testing or probing is necessary, but was not possible within the very short time allotted this evaluation. Perhaps AELGA staff, in collaboration with client countries, or a subsequent evaluation could undertake such a "performance" evaluation of early warning and monitoring mechanisms.

Meteorological data including windfields and frontal system locations are available to East African Crop Protection Services on a daily basis for a price from Nairobi. DLCO-EA who has used these extensively in the past to chart survey routes for swarm detection has had to forego their use for several years due to financial problems. Similar data is available to Sahelian nations from AGRHYMET. Windfield data was particularly useful to Senegal in 1993-94 to forecast the arrival of swarms from the north.

Satellite Vegetation Index Data (greenness maps) from the Artemus system have been provided to most Sahelian nations by AGRHYMET through funding from AELGA and the Famine Early Warning System (FEWS) and donor coordination from AELGA. Sahelian nations have found a wide range of usage for them in addition to l/g control. AELGA funded calibration of greenness satellite imagery for East Africa.

Remote sensing other than satellite based vegetation surveys until now has not proven very useful in the prediction of l/g outbreaks and upsurges substantially ahead of their occurrence.

Cold Cloud Duration, derived from Meteosat and Satellite Vegetation Index Data were inconclusive in determining what triggered the Malagasy Migratory Locust outbreak in 1992-93, but results may have been affected by the Mt. Pinotubo Volcanic eruption (Cherlet, FAO).

A GIS System: With AELGA funding and coordination, the FAO Desert Locust Information Service is installing a GIS system. Its adaptation to improved forecasting methods through the use of satellite imagery is a significant step forward and should continue to receive full AELGA support.

An Ecological Model: Dr. Michel Launois initially utilizing data based on the French Program of Interdisciplinary Research on the l/g of the Sahel, has been developing a preliminary ecological model for *Oedaleus senegalensis*. Its ultimate value will be to determine, in a given environment, whether or not conditions are favorable for a pest population upsurge. The data requirements for quantification of a predictive tool are substantial and Crop Protection Services are not responding well to this need.

b. The Desert Locust Information Service (DLIS) at FAO

- **Personnel:** FAO's DLIS is staffed at a much lower level than in recent years, but this has been more than made up for by the quality of the staff and equipment available. The principle technical officer from the U.S.A. was in Sudan through much of the last plague so has an intimate knowledge of the l/g problem from the field perspective.
- **Access to Data:** DLIS now has access to NOAA data through the ARTEMUS system and will soon have installed a METEOSAT receiver. A GIS has been installed and seems to be up and running. As a result of improved DLIS personnel and access to data, the predictive role of FAO is now much improved over past years and they are more capable of guiding national crop protection units to locations of high probability of l/g presence.
- **Ground and Air Surveys:** Through FAO, AELGA funded ground surveys in affected countries including Mali, Niger, Chad, Mauritania, Somalia, Senegal, Ethiopia and Sudan. In East Africa AELGA funded an aerial survey by DLCO-EA.
- **The Role of Ground Personnel:** A successful early warning system for any nation must start within the country itself. DLIS alerts and greenness maps from AGRHYMET are merely indicators. Knowledge of the actual situation must come from the surveyor on the ground. His or her knowledge and capabilities are the key to preventive control.
- **Weather Forecasting as Limitation of Current Early Monitoring and Warning:** Because of the key role of rainfall in population build-up, *long-term prediction* is impossible, because long-term weather forecasting is impossible. About two months is the current limit for meaningful prediction in the case of the Desert Locust, where the mobility of swarms and the variability of low level winds greatly complicate matters (FAO, 1987).

c. Some Technologies that Might be Included in the Warning and Monitoring System

- **Use of Desert Locust Ecological Surveys:** The FAO Desert Locust Ecological Surveys undertaken by Dr. George Popov produced valuable information on the locations of places supporting preferred food plants and breeding and egg laying sites. Overlaying Dr. Popov's maps with greenness maps and low level windfield data allows both aerial and ground surveyors to hone in on the most likely spots to find significant Desert Locust populations. This is a significant step forward from years past when surveys had to be conducted randomly.
- **Use of DNA Fingerprinting:** Borden, 1988 comments that "the use of DNA fingerprinting to trace the movement of locusts and to design tactics to manage locust populations is needed and is feasible." Suppose you have two locust populations. Did they originate from the same local? Would pesticides have the same effect on both populations? DNA analysis can help provide the answers.
- **Check Locusts for Evidence of Long Flight:** Identification of a swarm's geographical origins can be aided by checking locusts': 1) wings for evidence of long flight; 2) coloration as evidence of age; and 3) body parts to determine recent diet.
- **Historical Wind and l/g Trajectory Information:** When planning actions use historical knowledge already developed of frontal systems and their influence on the trajectories of swarming locusts. Such information exists for the area around the Red Sea where many l/g parent populations originate.

3 L/G Control: a Mix of Ground and Air Operations

There is a debate between AELGA and the evaluation team on the proper and actual mix between aerial and ground-based operations to survey and control l/g. Following is a compendium of comments and points of view from various sources. The evaluation team thinks that as a project output and as part of its "proaction" strategy, AELGA: 1) should have clear criteria for when and when not to use planes; and 2) should follow and test the criteria.

a. Some Literature

Below are quotes from a paper by Lucas Brader, former chief of Plant Production and Protection Division FAO and also Director of ECLO, and his staff; Jerry Roffey, head of the DLIS, and Rafik Skaf, head of the Locust Control Section, who are no longer in these positions.

"Strategic control of large scale Desert Locust populations will require much more intensive methods. Only aerial application of pesticides against both hopper bands and adults will be likely to lead to success" (Brader, 1989)

The central problem for locust control authorities is the need to maintain organizations with efficient monitoring and forecasting capabilities, *sufficient striking power* (aircraft, vehicles, pesticides, communications) and staff experienced in mounting large scale campaigns to prevent plagues.

With the Desert Locust the main difficulties stem from the *geographical remoteness of many of the breeding areas*. Breeding may, therefore, occur which remains undetected, or if detected only partially controlled. As a result numerous swarms may be formed which threaten to lead to a major plague as happened in 1967-68, 1977-78 and 1986-87 (Brader, Roffey, Skaf, 1989)

F. Laheta, Director of Locust Research (in Cairo Egypt) and former Secretary of FAO Near East Regional Locust Control Commission at the December 12-14 FAO Locust Seminar, 1987 in Cairo stated:

"It is of value to mention the aerial spraying by three aircraft of the U.S.A. Air Force in Saudi Arabia during March and April 1969. South Tihama of Saudi Arabia is considered one of the important breeding areas of the Desert Locust and was always a source from which swarms invade surrounding countries. Aerial spraying of the whole area eliminated the chances of migration to central and north Saudi Arabia. Such aerial spraying if conducted in high frequency breeding areas at the appropriate time could certainly help in the reduction of infestation and in the prevention of locust plagues."

b. Points of View on Aircraft Use

• The Cost of Airplanes

AELGA: . . . such a project was proposed (and quickly rejected) in 1990 by FAO and by IFAD at a cost of \$55 million alone to cover West Africa alone for five years. . . (AELGA response to the draft evaluation).

The Evaluation Team: The 1987 FAO technical committee reported: "The budget of DLCO-EA is about \$4.5 annually, OCLALAV's theoretical budget is around US \$1 million; such levels of finance optimally applied fully suffice for preventive Desert Locust control in Eastern and Western Africa in most years." *In spite of this, the FAO/IFAD team, of which AELGA was a member submitted a proposal requiring \$55 million over 5 years and included only West Africa.*

Aircraft are expensive, but last a very long time (decades). If vehicle depreciation and all personnel cost is considered aircraft application is much less costly. J. Henderson, USDA/APHIS, made an analysis of application costs in Senegal during the 1986-1987 grasshopper control effort. With large contract aircraft the cost per ha. amounted to about \$ 6.00. With smaller aircraft (Turbo Thrush) the cost was slightly higher, but with ground equipment (including hand application) cost amounted to \$ 20.00 per ha.

• Use of Planes for Detection and Early Outbreak Control

Evaluation Team: Some of AELGA's evaluations and planning documents suggest that the overall role of planes should be reduced, at least compared to the 1985-1989 plague.

It is the evaluation team's conclusion that with respect to airplane use, the wrong lesson may have been learned from the 1985-1989 and 1992-94 l/g infestations. It seems that planes *may be* conceived of as necessary when an upsurge grows beyond crop protection unit capabilities, rather than as a tool to prevent crop protection units from being overwhelmed.

The evaluation team believes that the way to decrease overall airplane participation may be to increase airplane participation during detection and outbreak control, so that massive airplane intervention is not needed for upsurge and plague control.

AELGA: AELGA does support appropriate early use of aircraft to perform both survey and control at the early outbreak stages. This was very apparent during the 1992-1994 outbreak and in the 1995 outbreak in Eritrea.

- **Aircraft are Likely to Overspray**

AELGA: Aircraft are often more liable to overspray areas and pose hazards to the environment. This has been made abundantly clear in the OTA report, the USAID environmental concerns document, the SEAs, the PEA and the evaluation report itself. . . . A good example of this was during the 1995 campaign in Eritrea where, in contrast to the statements of the evaluation report, aerial applications were problematic. (AELGA reaction to draft evaluation, pp. 32, 33)

A Calibration Mistake

FAO Observer: A second matter concerned pesticides, poor results having been achieved to the extent that farmers had complained that four aerial sprays had produced negligible kill An initial assessment, made by Alan Showler, that the same chemical had worked perfectly well when applied by vehicle mounted sprayers (FAO Trip Report Regarding the Eritrea Locust Outbreak of 1995. p. 4.)

AELGA: DLCO not only failed to apply the insecticides properly, but they also calibrated incorrectly. Thus it has become clear that DLCO flew improperly, repeated applications over the same swarms and calibrated wrong.

Dow Elanco (the pesticide manufacturer): This pesticide was purchased by FAO using AELGA funds. After the applications, news was circulated from the ministry that Dursban 240 ULF gave only 1% control, with the conclusion that this product must be withdrawn from any use The interview with DLCO confirmed our suspicion (that the 1% report was mistaken). The mortality for this half dose was 60% and not the reported 1%. The underdosing seems to be intentional and in good faith and supported by a previous local authorities report of 1994.

- **Wastage/Environmental Pollution (Due to Mal-Functioning Walkie-Talkies?)**

FAO (9/28/95): the DLCO Beaver arrived in the area. Walkie-talkie/aircraft communication could not be established for unexplained reasons and the aircraft performed a classic example of pesticide wastage/environmental pollution, spraying an area where no locusts were viable and spraying far too high. The probable reason was that the pilot thought that the locusts were near a mountain and he judged it to risky to spray low. The proper decision would have been not to spray at all. (FAO Trip Report Regarding the Eritrea Locust Outbreak of 1995. p. 2.)

The Evaluation Team: AELGA has recently conducted a training program for Eritrean Plant Protection Agents on locust control, which included control methods and techniques. Did the course not place sufficient stress to convey the need to assure that the proper dosage is applied, swath-width determined and equipment properly calibrated for either standard swath widths, or drift spraying prior to application and the equipment make and type?

If areas to be treated are properly marked and swaths flagged, or in the absence of flaggers the aircraft are equipped with suitable guidance systems, aircraft applications can be more accurate than ground application with less variability in dosage rate as aircraft can maintain a constant rate of speed.

- **Aircraft Have Mechanical Problems**

AELGA: Aircraft, especially helicopters, are mechanically problematic and expensive to use. In some countries, aircraft were grounded for considerable periods as a result of mechanical problems.

Evaluation Team: The same can be said for ground equipment. A principal cost in the 1985-1989 plague was purchase of new vehicles and ground application equipment and spare parts for same.

- **Planes Can Be Dangerous and Have Been Shot Down**

AELGA: Airplane use is frequently dangerous. While it is true that aircraft are useful for treating areas that are mined, aircraft have been shot down. In 1988, two U.S. C-130s were hit by Polisario guerrilla surface-to-air missiles over Western Sahara. One of the C-130s crashed, killing the entire American crew of five and the other barely managed to make it to an airfield in Morocco. A helicopter (being funded by AELGA) crashed, very possibly shot down, near the Ethiopia/Somalia border in 1993. The bodies of the injured and killed alike were ransacked and left in the desert until searchers arrived. A light aircraft in the 1986-1988 campaign crashed into the side of a mountain in Eritrea. Botswana recently lost an airplane and crew also.

Evaluation Team: The two U.S. aircraft were DC-7s not C 130s. They were not on a spray application mission. They were ferrying the aircraft to Morocco to join other aircraft from the same company prior to returning to the U.S. on completion of their contract. Although aerial application is risky, statistics show that on a per mile basis aircraft flight is significantly safer than vehicular travel.

- **Evaluation Team Paragraph from the Draft Evaluation Report**

Planes cover wide and far away areas, cross borders, have no problems with land mines, can control l/g even if national organizations are weak, ground activities are weaker than before because now dieldrin can not be laid down as a long lasting and deadly perimeter to kill hoppers (larvae) over wide areas, do not damage farm land or the environment with

their wheels and aircraft can operate from established locations where they are easily supplied with insecticide.

4. Control of the Eritrea 1995 Upsurge

In September 1995 a locust upsurge occurred in Eritrea. The upsurge coincided with the evaluation team's visit to Eritrea and at the time of the evaluation team's visit the l/g control effort by the Ministry of Agriculture Crop Protection Service was progressing satisfactorily with the DLCO-EA aircraft support. Locusts had been cleared from the highlands and on 9/27/95 aerial operations had moved to the western lowlands.

5. A Debate on The Origins of the Eritrea-1995 Upsurge

There is a debate between AELGA and the evaluation team on whether the parent population of the l/gs originated inside or outside Eritrea. On the one hand, **AELGA** insists, on the basis of FAO reports, that the l/g swarms originated *outside their region* and entered by way of Chad and the Sudan. On the other hand, the **evaluation team** admits that it does not know for certain where the l/g swarms came from, but suggests that:

- A pervasive and understandable phenomenon among l/g controllers is to never admit that l/gs originated on your own turf.
- It is a mistake to ever insist with absolute certainty on the origins of l/gs, for instance: studies by former UK Antilocust Research Institute specialists estimate that only 30% of hopper bands are ever found (personal communications with Popov, Rainey, Ashell, Joyce and Sayer).
- Locust swarm movement is contingent on wind conditions.
- Based on research on l/g trajectories and wind patterns, the parent population could just as readily have: a) originated, on the southern Red Sea, or Gulf of Aden coastal areas of Somalia; b) migrated westward undetected, via Ethiopia's Dessie escarpment and Takazee River gorge; and 3) arrived in Eritrea's western lowlands in about June, at which time breeding and egg laying could occur.
- Swarms develop in northwestern Somalia from about late April through May. Dependent upon weather conditions these may move west (the annual change of the monsoon wind occurs at this time with SW winds blowing in the morning with severe cumulonimbus clouds extending in a line north-west into Ethiopia) arriving in Eritrea's western lowlands in about June.

In any event, the inside the region/outside the region theories **both** expose weak points in AELGA's "proactive" approach to controlling l/gs centered on strengthening national crop protection units, unless they have a separate, distinct and specially equipped l/g control unit.

If the l/g swarms originated *outside the region* (in the Sudan or Chad for example), Eritrea is at the mercy of the effectiveness of crop protection units in the Sudan and all neighboring countries. This weak point might be termed a *design weakness*, because it reflects on the *design or strategic decision* of strengthening national crop protection units rather than regional organizations.

If some of the l/g swarms originated *inside the region*, Eritrea's own crop protection unit did not detect the hopper bands and swarms early enough to eliminate them before they threatened croplands. This weak point might be termed a *performance weakness* because it means that the Eritrean crop protection service did not perform up to par.

AELGA seems more concerned by the idea of a performance weakness than that there might be design weakness. The opposite should be considered since correcting a performance weakness (improving Eritrean crop protection service effectiveness) is much easier than correcting a design weakness (in this case, strengthening the performance of crop protection units of all Eritrea's neighbors and rethinking the whole approach).

D. Conclusions

■ **Early Warning and Monitoring**

Due to a lack of time, the evaluation's approach is descriptive, rather than evaluative. A more meaningful approach is suggested among the recommendations.

■ **Environmental and Pesticide Management**

- AELGA's renunciation of dieldrin and the triangulation strategy are commendable programs which may to a large extent resolve the problem in the future of excess l/g pesticides.

They do not, however, address the issue of l/g pesticides from *previous control campaigns* that through leakage etc. are slowly contaminating many African locations and posing serious long-term health and soil hazards.

- Through the 1990 OTA report, the U.S. Congress has requested that USAID assess pesticide disposal problems associated with l/g control efforts in Africa from legal, ethical, political, budgetary points. The report asks, "*How is USAID addressing insecticide storage and disposal problems resulting from previous locust/grasshopper control efforts?*" What monitoring is underway for longer term health and environmental effect?"
- The revised or amended SEAs reviewed have added little to the original PEA other than to add coverage to an additional pest or pests and knowledge of the control techniques to be utilized. They have not added substantially to the solving the environmental issues involved.

- AELGA's experience with SEAs shows that just doing the analysis is not sufficient for sound pesticide and environmental management to occur.

■ A Mix of Ground and Aerial Operations

- There is a debate between AELGA and the evaluation team on the proper and actual mix between aerial and ground-based operations to control l/g.
- The evaluation team is convinced, along with experts such as Brader, Roffey, Skaf and Laheta, that preventive l/g control can never be attained without an aerial survey and strike force and a cadre of personnel to travel and work for relatively long periods in remote locations.
- So far AELGA has concentrated most effort on improving ground operations and little on improving aerial operations.
- With a proactive approach (which is basically plague prevention), the evaluation team predicts there will be an increased dependence on aircraft, as numerous hopper bands will form and swarm migration will occur. Nations without their own aerial control units, or without commercial applicators, will rely to an even greater extent on established regional organizations, or call on donors for *reactive* control assistance.
- The basis for this conclusion comes from various chapters of this report as follows:
 - definitions of "prevention" and "proaction" as carried out in the field, seem little different from the strategy applied between 1962 and 1985;
 - estimates and computer models of l/g population increase preceding plagues place even the theoretical feasibility of "proaction" in doubt;
 - regional organizations which in the past had some of the necessary strengths and tools to reduce l/g plagues are in a deteriorated state;
 - most national crop protection services are weak and some do not have separate l/g control units; and
 - since l/g infestations do not respect national boundaries, a national crop services approach means that even countries strong at l/g control will be at the mercy of neighboring countries' weaknesses.
- **Costs:** On the one hand a FAO/IFAD team, of which AELGA was a member, arrived at a \$55 million dollar budget to cover aircraft and perhaps other operations in West Africa over five years. On the other hand, in 1987, the 1987

FAO Technical Committee calculated the yearly budget DLCO-EA in East Africa at U.S. \$4.5 million and OCLALAV in West Africa at U.S. \$1 million a year.

- **Spraying Errors:** It seems that DLCO-EA committed some spraying errors in September 1995 in Eritrea. Also the OTA report identifies spraying errors by air operations as a probable source of pesticide contamination; and the AELGA environmental concerns document makes the same point. The OTA report, the PEA and USAID's Locust Management Operations Guidebook place the responsibility of assuring that USAID purchased pesticides are used properly squarely with USAID project management (AELGA).

E. Recommendations

■ Pesticide and Environmental Management

- Pesticide disposal is an area where AELGA might attempt a large contribution, in terms of innovative ideas and generating collaboration if not investment. Reaction to the draft evaluation argues that addressing the pesticide disposal problems lies outside the AELGA mandate. The evaluation team suggests that pesticide disposal falls well within a clause statement in the Project Paper Logical Framework Purpose which reads: *"To treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests."*
- An inventory listing of unwanted or unuseable pesticide stocks in Africa should be obtained and kept on file for consultation. If there is no such information in existence in some African countries, then AELGA could be instrumental in obtaining that information.
- Serious consideration should be given to a funded action plan to dispose of all stored and obsolete pesticides. In most cases the Supplemental Action Plan is a good start. Pesticide disposal deserves a big budget and USAID should *consider* taking responsibility since many of the pesticides were bought with USAID and other donor money.
- Unless aerial control organizations: (1) have demonstrated proper application techniques, (2) have knowledge of approved application dose rates, and (3) are equipped with acceptable application equipment that is properly calibrated, supplying them with additional pesticide should be more closely examined. AELGA should systematically train aerial support groups, so that spraying errors are minimized.

■ Early Warning and Monitoring

- A meaningful evaluation of early warning and monitoring systems would require testing or probing of early warning and monitoring performance in terms of:

coverage, rapidity of turn-around, accuracy, user-friendliness and above all utility in making decisions regarding proaction and prevention efforts.

- Explore augmenting and improving early warning and monitoring through use of Desert Locust ecological surveys, DNA fingerprinting, checking locusts for evidence of long flight and historical wind and l/g trajectories.

■ **A Mix of Ground and Aerial Operations**

- With a "proactive approach" be prepared for frequent requests for aircraft and calls on donors for reactive control.
- On the one hand, AELGA and USAID should consider setting up a emergency fund to be used for control operations only, not to be used for training, research, awareness.
- On the other hand, African nations cannot support the maintenance of an Aerial Control unit. Therefore, the training of aerial applicators, aircraft engineers and mechanics should be preceded by an institutional analysis.
- Funds are released from this fund only after an approved, detailed plan of worked has been developed and approved by the Minister of Agriculture of the host country and the USAID Director.
- AELGA and FAO criteria for funding aerial support should encourage national aerial units first, regional organizations second and commercial applicators third.

■ **Topics for Analysis**

- As a project output and as part of its "proaction" strategy, AELGA should have clear criteria for when and when not to use planes and should monitor and test against the criteria.
- Data must be analyzed on aerial and ground performance during upsurges such as those in 1992-1994 and in Eritrea in 1995 to see what lessons can be learned. Some data of this type are presented in articles written by AELGA staff.
- The cost of aerial operations needs to be re-visited and compared to ground operations and to other aspects of the l/g control system AELGA is helping to build. Why are the recent FAO/IFAD estimates higher than others?

F. Research and Publications

1. Bio-control Research

In AELGA planning and reporting documents, the concept of bio-control research efforts has evolved as shown in the table below.

PROJECT PAPER OUTPUTS (LogFrame plus supporting list 1987)	USAID (AELGA) ACTION PLAN (1987)	AELGA REPORTING CATEGORIES, TOPICS (1995)
Research technologies Research in biologicals	Support <i>adaptive research</i> needed to take advantage of recent advances in pest identification, survey, early warning and control technologies.	<ul style="list-style-type: none"> • Research on biological, botanical control • Awareness program • Academic publications

**Chart 5: Evolution of Planning and Reporting Documents
Bio-control Research Efforts**

a. The Problem

An obstacle to effective control and prevention of l/gs in Africa is the lack of research on biosystemics of African l/g's and their natural enemies. Some effort has been made to catalog the natural enemies (parasites and predators) of l/g's in Africa, but the mobility of the host does enhance the practicality of their usage as a control technique.

b. Positive Aspects of the Bio-Control Research

Biological control research conducted by MSU and Mycotech Corp. through grants from AELGA is being conducted at three locations, Cape Verde, Mali and Madagascar. The nationals involved in laboratory production and assays, with whom the evaluation team talked in both Mali and Madagascar, are hard working and dedicated to their work. They have all received training by MSU in the specific tasks associated with their positions.

AELGA's encouragement of research on entomopoxes, microsporidium and fungi is commendable. The registration by EPA of Mycotrol GH a derivative of the fungus, *Beauveria bassiana*, for l/g control is a major breakthrough, environmentally and opens the door to new or radically revised control approaches. Much of the test work leading to registration was accomplished in Africa with AELGA financial support.

Other potentially useful pathogens that have been or are presently being tested with AELGA support are *Oedaleus entomopoxvirus* and fungi of the *Metarhizium spp.* The advantages of fungi are high virulence, fairly rapid action (though less than many chemically based pesticides) and the ease and low cost of mass production. These are the l/g tools of the future. AELGA participation in their development is evidence of the forward vision of its staff.

c. **Strengthening of African Bio-control Research Capacity**

An internal evaluation of AELGA Bio-Control Research states:

Institutional strengthening and national capacity building in the l/g biological control project is fairly strong in Madagascar. Laboratories are relatively well equipped and are carrying out commendable research with support of a full-time technical coordinator (an American). Cape Verde has well-maintained facilities at INDIDA and is directly supported by MSU's regional coordinator who resides in Cape Verde. Mali seems to be the least equipped of the three countries and there is only an occasional MSU presence in the . . . Training of local staff has been adequate both in host countries and at MSU. However, for a variety of reasons, the level of expertise in Mali, Madagascar and Cape Verde is not currently favorable to take charge of l/g biological control activities independent of external technical support. (*Evaluation of the USAID-Funded Grasshopper-Locust Biological Control Research Projects*. AELGA, pp. 3-4.)

The evaluation team takes a more critical view. When the work the bio-control researchers are now conducting is complete, African technicians involved in the research may be left with little except memories. Little provision is made in the grants to MSU to provide these people with a broader knowledge to prepare them for termination of the project. True institution building seems not to have been provided.

In Madagascar, fortunately, GTZ has a decided interest in the Madagascar technicians and may provide the necessary additional training and find suitable positions for them within or outside the Malagasy government.

GTZ has stated that if USAID should fail to find funding for future work on fungi in Madagascar, they would try to help directly or indirectly. The MSU project in Madagascar has been collaborating closely with GTZ from the beginning of the project. For example, the salary of MSU's lead Malagasy researcher is paid by GTZ and GTZ is contributing to the establishment of a small fungal production facility adjacent to the MSU-established bio-control lab. (Reaction of an MSU representative the draft evaluation report)

GTZ has already contacted IITA and an Australian group. The evaluation team was given assurance that GTZ will not let the research die.

The AELGA/Montana State University studies on the development of biologicals in Mali has clearly added stature and prestige to the National Research Institute of Mali. The Institute is proud of its association with the project. But in some instances in Mali, AELGA has been neglectful of these national institutions. Previous AELGA research activities in Mali such as the Dynamac pesticide tests and field tests involving the protozoan *Nosema locustae* were conducted exclusively with the Crop Protection Service. AELGA's involvement in research would benefit from closer association with the national research institutes.

Little provision seems to have been made for communication among the groups of laboratory workers in the three countries. Neither group of technicians is aware of what the others are doing, how they are doing it or what they have learned, unless one of the projects research directors drops by and informs them, which is not a common occurrence. Seminars, conferences and training courses are provided for the research directors and other interested researchers (i.e., the Nairobi Bio-control training session) but, at the technician level, no provision has been made for any interaction. Improved communication at this level might lead to breakthroughs.

2. Economic Threshold Research

In AELGA planning and reporting documents, the concept of economic threshold research for justifying and guiding l/g control efforts has evolved as shown in the table below.

PROJECT PAPER OUTPUTS (LogFrame plus supporting list 1987)	USAID (AELGA) ACTION PLAN (1987)	AELGA REPORTING CATEGORIES, TOPICS (1995)
Contracts to develop reliable evaluation data	Establish <i>standards and criteria</i> for determining when and where to apply strategies for control of the pests	Co-fund FAO economic threshold research

Chart 6: Evolution of Planning and Reporting document — Economic Threshold Research

a. Economic Threshold Research and Evaluation of AELGA

The 1987 Project Paper treatment of economic thresholds for l/g control efforts states:

... a serious professional effort must be made during the life of the project to develop reliable data against which the various interventions and activities of the project can be evaluated and from which economic judgements can be made. For example, at what level of infestation should intervention begin, of what type, how intensively and where in order to protect what, etc. The selection of a contractor to develop and implement a system for answering some of this questions will be an early implementation activity of the project. (p. 34)

Economic justification and criteria for deciding when and where to operate would be enormously useful for AELGA and others involved in l/g control. In particular, financial support for l/g control might increase within USAID, FAO and among donors. Chapter IV of this report explains the difficulties of evaluating AELGA at its goal and purpose levels without economic thresholds and criteria.

b. An Economic Threshold Research Contract Let by AELGA

To comply with the above Project Paper stipulation, AELGA has financed research by Oregon State University and the Consortium for International Crop Protection to develop computer software for undertaking cost-benefit analysis which could be used as a tool for making decisions involving intervention with pesticides against outbreaks of grasshoppers/locusts. It compares the cost of treatment with the cost of projected crop loss. The benefit/cost analysis modeling software developed in 1987, is known as the Sahelian Grasshopper/Locust Crop Loss Simulation, or GHLSIM. A model has been developed and tested in Chad and some follow-up work was carried out by the International Plant Protection Center between 1989 and 1992.

The evaluation team requested a copy of a report on the GHLSIM work but none seems to be available. Interviews reveal that, to date, GHLSIM has not been used as a project decision tool. The principal reason given is that the model is too complex and sophisticated for the donor and host country decision makers to understand and use. There is a definite consensus that it is not user friendly. Also, GHLSIM analyzes the cost of treating one pest, while the reality is that often several different pests can be found on the crop in the same field.

c. The Latest Economic Threshold Research Plan

In its 1995 Plan of Work, AELGA proposed to co-fund economic threshold research undertaken by FAO. In the Activity Plan, AELGA explains with regard to a long-term strategy for the *prevention* of locust plagues that:

"The donors collectively agreed that such a strategic plan would not be supported until data on the economics of locust plagues and control programs has been compiled to justify investment in such a venture. During the FAO meeting, the donors made this prerequisite clear and the donors even indicated that they could fund such an effort once FAO had devised a plan by which to carry it out. The donors are currently pressing FAO to generate a study that may, according to FAO, require several years to complete. Once a proposal or plan is presented to donors, USAID should move to co-fund through a grant once the proposal is deemed to be technically acceptable. (AELGA 1995 Activity Plan, p. 7)

d. Problems Encountered by Economic Threshold Research Based on Vegetative Consumption

Use of the vegetative consumption of l/gs for determination of economic thresholds has been attempted by an AELGA contractor. Such research has been attempted several times before (See USAID/Morocco, 1988) Complicating factors have been:

- Vegetative consumption of grasslands by l/gs does not equate well with that of crops.
- Different plant species and portions are susceptible to consumption by l/gs in varying degrees. Examples: millet in the Sahel, has a very low per ha. monetary value when compared to citrus in Morocco and both crops are subject to attack from a variety of insects and plant diseases.
- Plant susceptibility varies with the plant's stage of development.
- Some grain crops can withstand significant foliage loss without appreciable effect on overall production.
- It is not practical to separate mixed populations by specie when arriving at an economic threshold.
- L/gs consume at different rates depending on their stage of development (larva, instars, adults, etc.).

- It is not practical to separate larval forms from adult forms, nor among larval instars.
- Account must be taken of damage caused by other insect pests.
- Whether a meaningful vegetative consumption-based study can be accomplished is doubtful since few farmers will be willing to give up their production in the name of research.
- Few if any donor nations will be willing to stand by and let a l/g plague run its course in order to develop the necessary detail such a study will require.

e. Disaster relief models and natural resource economics may provide models for estimating the agri-economic cost of l/g plagues.

One "disaster relief model" is shown in Tables V-3 and V-4. New parameters that might apply to l/g plagues include: temporary and permanent migration, loss of commerce, disordered market and distribution and social disruption. Other costs which might be factored in, of particular interest to USAID are:

- costs of food aid and other disaster relief; and
- development programs and funding disrupted by emergency investment in combating and recovering from l/g plagues.

Other sources of models for analyzing the economics of l/g plague control are the fields of natural resource and environmental economics, which are continually faced with the challenge of attaching value to costs and benefits outside the market economy.

f. Some Lessons Learned for USAID Managers

- **Politics and compassion may overwhelm agri-economic analysis until the analysis supports l/g plague prevention.**

An accurate statement of the sentiment of many responsible professionals both inside and outside l/g projects and programs is as follows:

Table V-3**Immediate Economic and Social Effects of Natural Disasters**

<i>Type of Effect</i>	<i>Earthquake</i>	<i>Cyclone</i>	<i>Flood</i>	<i>Tsunami</i>	<i>Volcanic Eruption</i>	<i>Fire</i>	<i>Drought & Famine</i>
<i>Temporary migration</i>							X
<i>Permanent migration</i>							X
<i>Loss of housing</i>	X	X	X	X	X	X	
<i>Loss of industrial production</i>	X	X	X	X		X	
<i>Loss of commerce</i>	X	X	X	X		X	
<i>Loss of agricultural production (plant crops and harvest)</i>		X	X	X	X	X	X
<i>Damage to infrastructure</i>	X	X	X	X		X	
<i>Disordered markets and distribution</i>	X		X				
<i>Interrupted transportation systems</i>	X		X				
<i>Breakdown of communication</i>	X	X	X	X		X	
<i>Panic</i>						X	
<i>Social disruption</i>	X	X				X	

Source: Adapted from Cuny 1983

Table V-4

Effects of Selected Disasters in Latin America and the Caribbean

<i>Event</i>	<i>Economic performance</i>	<i>Fiscal effects</i>	<i>Balance of payments effect</i>	<i>Infrastructure and capital losses</i>
Managua, 1972	GDP fell 15% overall and 46% in industrial and productive activity in Managua	Tax revenue fell 39%	Sixfold increase in current account deficit; reduction of almost 20% in imports due to extraordinary needs	Capital losses and lost production amounted to a sevenfold increase in investment requirements in fixed capital, both private and public
Honduras, 1974	GDP fell 6% overall and 23% in agriculture	Fiscal deficit grew 79% due to a decrease in current tax revenues of 15% and an increase in expenditures of 65%	Threefold increase in the current account deficit; imports grew 61%, and exports fell 66%	Loss of national assets and decrease in production represented almost twice the average annual investment
Antigua and Barbuda, 1974	GDP fell 12%, especially in oil refining, which fell 30%, tourism, basic services, and housing	Fiscal deficit increased 3 times	Balance of payments deficit increased 4 times	Damages to infrastructure represented around 4 times the average national investment
Grenada, 1975	GDP fell more than 20%; 10 years are needed to reach full agricultural production in plantations	Fiscal deficit increased more than 60%	External imbalance grew 4 times	Capital losses and damage to infrastructure amounted to 5 times the average annual investment
Dominican Republic, 1979	GDP fell 8%	Fiscal deficit increased 8 times	External deficit increased 27%	Capital assets lost twice the average of yearly investment
El Salvador, 1982	GDP fell 2%	Fiscal deficit increased 30%	External deficit grew 25%	Losses of capital and infrastructure equivalent to average investment in one year
Ecuador, 1982-83*	GDP fell almost 3%	Fiscal deficit increased 20%	Balance of payments deficit increased 22%	Capital and infrastructure losses equivalent to 3 years of domestic investment
Bolivia, 1982-83*	GDP fell 10%, 55% in agricultural sector	Fiscal deficit increased more than 275%	External sector imbalance grew 30%	Total losses were estimated at \$836.5 million
Peru, 1982-83*	GDP fell 5%	Fiscal deficit increased 33%	Current account deficit in balance of payments increased 30%	Total losses were estimated at \$2.0 billion
Mexico, 1985	GDP fell 2.7%	Fiscal deficit increased 7%	Balance of payments effect was negligible	Total losses were estimated at \$4.1 billion
Nicaragua, 1988	GDP fell 2%, 17% in the agricultural sector	Fiscal deficit increased 20%	Balance of payments deficit increased 10%	Total damages estimated at \$839 million
Nicaragua, 1992 Cerro Negro (volcanic activity)	GDP fell less than 1%	Less than 10% increase in fiscal deficit	Balance of payments deficit increased 2%	Total damages estimated at \$19 million
Tsunami	GDP fell almost 1%	Fiscal deficit increased an additional 5%	Balance of payments deficit increased 24%	Total losses estimated at \$25.00 million

a. Estimated for 1983.

Source: ECLAC, on the basis of studies conducted in the field in each case.

A decision not to intervene is considered by many to be morally irresponsible given the ever-present threat of malnutrition in Africa. Inaction is also politically unacceptable in agrarian nations wherein crop production is vital to the survival of farmers and the government alike. (*Desert Locust Plagues in North Africa: Environmental Protection and Human Safety*. Showler, 1995, p. 3,4)

- **The costliness of reaction to plagues is not sufficient justification for investment in prevention or proaction. The proaction must show promise of preventing or reducing the seriousness of plagues, for the investment to be worth it.**

Investment in l/g control (be it prevention or proaction) is only warranted if the prevention or proaction has been proven to reduce frequency, intensity of l/g plagues and damage cause by them. It is a mistake to invest in prevention and proaction merely because reaction to plagues and disaster assistance are costly.

- **Do not assume that lack of plagues, or damage from plagues, means that plague prevention (or proaction) has been effective.**

It has been claimed that plague prevention costs less than plague control. This is entirely depends on whether the outbreak would develop into a plague if it was uncontrolled and if so whether this can be prevented. (*Desert Locust Control with Existing Techniques*. Wageningen Conference, 1993, p. 13)

Large plagues are relatively rare occurrences and most outbreaks and upsurges would not become plagues even if left alone.

3. Publications and Awareness Campaign

AELGA generates many publications which make up its "awareness" program. Publications include articles in scholarly journals and *Front Lines*, chapters for books, support to publication of technical manuals through other donors; the PANOS Institute and FAO. The latter includes helping to produce and distribute tens of thousands of copies of educational materials on locust control and prevention to host country crop protection services across Africa. It must be questioned whether USAID money should be spent publishing articles in publications such as the *American Entomologist* if there is no obvious link to field use of the information.

G. Conclusions Regarding Research and Publications

1. Bio-Control Research

- **The research itself:** AELGA's encouragement of research on entomopoxes, microsporidium and fungi is commendable, an investment in the l/g tools of the future and opens the door to radically revised control approaches and major environmental breakthroughs.
- **Research Capacity:** Development of research capacity means not only training of lab assistants, but also training of high level researchers, support of a medium-term program (five years) and perhaps regional collaboration.

- The job of ensuring that the research does not inadvertently take advantage of African countries' biology and cheap labor belongs to USAID and the people who design projects — not to the researchers. Putting stipulations in research contracts may be insufficient. USAID and/or AELGA must get actively involved in building research capacity if it is to happen.
- Sustainable African bio-control research capacity may not be feasible, but is desirable from USAID's point of view and should at least be explored. The same can be said of African/U.S. industry based on the production of bio-control products.

2. Conclusions Which Affect Who Should Fund and Manage the Bio-Control Research

- Management of bio-control research should be regional, so that there can be cross-fertilization among countries and projects.
- Bio-control research takes a long time and it is the evaluation team's view that focusing on one viable product and then ending the research is short-sighted, risky and makes poor use of the progress made.
- AELGA in particular, and perhaps USAID in general, may not be able or willing to give the bio-control the research the 5 year financing necessary to come up with several viable products and establish a regional bio-control research program. The fit between bio-control research and the strategic objectives of bilateral missions, which tend to economic and relatively short term, is doubtful.
- The bio-control research findings will be as useful for crop protection as for prevention or proaction; therefore, over the longer term its fate should not be tied to AELGA, whose funding must be tied to whether it accomplishes prevention or proaction

3. Economic Threshold Research

- In spite of the Project Paper stipulation regarding economic thresholds, AELGA has gone eight years without useful economic analysis.
- Effort invested by others in economic threshold research has been substantial. However, none of the agri-economic analyses, past or present, are satisfactory, or show promise of being satisfactory.

We fully recognize: 1) the difficulty of arriving at economic thresholds for l/g control; and 2) the substantial hard work that has been done by smart people without arriving at a satisfactory, economic threshold analysis and criteria.

- In sum, agri-economic thresholds and criteria seem on the one hand to be necessary. On the other hand the evaluation team sees no reason to believe that more AELGA support will produce a break-through.
- In a sense, the buck seems to have been passed by AELGA, after little progress in the economic threshold and research area, to FAO where perhaps it belongs.

4. Awareness and Publications

Many of AELGA's publications are of an academic and highly technical nature and would seem to have little influence on decision makers with influence in Africa.

H. Recommendations

1. Bio-Control Research

- All AELGA bio-research should be analyzed for the possibility of building a permanent bio-research capacity and developing a bio-control business or industry, with African scientists and business partners.
- USAID should provide five-year financing and a regional program for the AELGA bio-control research, or USAID should finance the research until it has been transferred to more stable hands and act as a marketer and go-between.

The choice between the two alternatives suggested above depends on the future fit between AELGA as a whole and the USAID/Africa Bureau's objectives and whether AELGA can prove that proaction is a feasible way to reduce future l/g plagues, the damage done by them and disaster assistance expenditure.

- All contracts USAID has with bio-control research organizations should be analyzed to determine: 1) intellectual property rights; 2) responsibility of research groups to share profits with the countries, people and governments who collaborated on the research. This is not to suggest that there are existing problems with the current contracts or contractors.

2. Economic Threshold Research

- In light of the difficulty of determining economic thresholds and criteria which are both analytically sound and acceptable to skeptics and proponents and the effort that has been expended by AELGA and others in the past without useful results, the evaluation team reluctantly supports the AELGA recommendation to co-fund FAO's economic threshold research to the extent that it plows new ground.
- Effort should be made to avoid the pitfalls discussed earlier in this Chapter and to include variables from economic analysis of disasters natural resource economics.

- Factors from disaster economics which might prove useful to examine are costs to a country or region of: a) migration; b) disruption of institutions and services; and c) disruption of markets. From the donor point of view, costs of food aid and other relief and disruption of donor development programs must be factored in. (See Tables V-3 and V-4)
- The economic worth of l/g control should be combined with the probability of success of the control (be it prevention or proaction) to arrive at an investment criterion called "Expected Value."

Ideally, to calculate "Expected Value," economic value is multiplied by the probabilities of success from technical viewpoint and institutional viewpoints. An implication of the "Expected Value" approach is that no matter how valuable or worthwhile a project is, if it can not deliver on its objectives, it is not worth investing in. (See Table V-5 for more on the model and Table V-5a for material on technical feasibility.)

- Perhaps a judgement of whether l/g prevention-control is worth it in an absolute sense is out of our reach. But maybe we can compare the pros and cons of different types and degrees of l/g prevention-control. Table V-6 presents a tool for making the comparisons.

3. Awareness Program and Publications

- Find out how much time is spent on writing scholarly articles, what USAID policy is with regard the writing of articles for academic journals on project funds and how such writing fits with the Project Paper, Project Amendments and job descriptions of AELGA staff.
- Relate each AELGA publication to the question, "Who needs to know what to further project objectives?" before scholarly work is approved and begun.
- Analytical work by AELGA staff might concentrate on the relation between the proactive approach and the population dynamics of locusts and grasshoppers. The relationship has been the basis of funding for AELGA, but the basis for it awaits in-depth analysis.

Table V-5

FEASIBILITY QUESTION: Can "proaction" reduce damage from major l/g plagues, and reduce expenditure on combatting and recovering from l/g plagues?			
FEASIBILITY ISSUES	ECONOMIC FEASIBILITY	TECHNICAL FEASIBILITY	INSTITUTIONAL FEASIBILITY
SIMPLE QUESTIONS	Is it worth it?	Is it possible (current, foreseeable technology?)	Is it possible? (current, foreseeable organizations?)
AELGA	Agri-economic justification and decision criteria	Relations among: <ul style="list-style-type: none"> • L/G population dynamics • The "proactive" approach to prevention • Insecticides available and permissible • Detection systems 	Capacity of: <ul style="list-style-type: none"> • National crop protection units • Regional l/g organizations
SOME ANALYTICAL APPROACHES AVAILABLE	<ul style="list-style-type: none"> • Disaster Prevention and Sustainable Development WB,Krall (GTZ) • Vegetation loss 	<ul style="list-style-type: none"> • Definitions of "proaction", "prevention", etc. • "Desert Locust Control with Existing Techniques" (van Huis, Gruys, Magor, Roffey (Britain) 	Recurrent costs MSI Models

Table V-5a

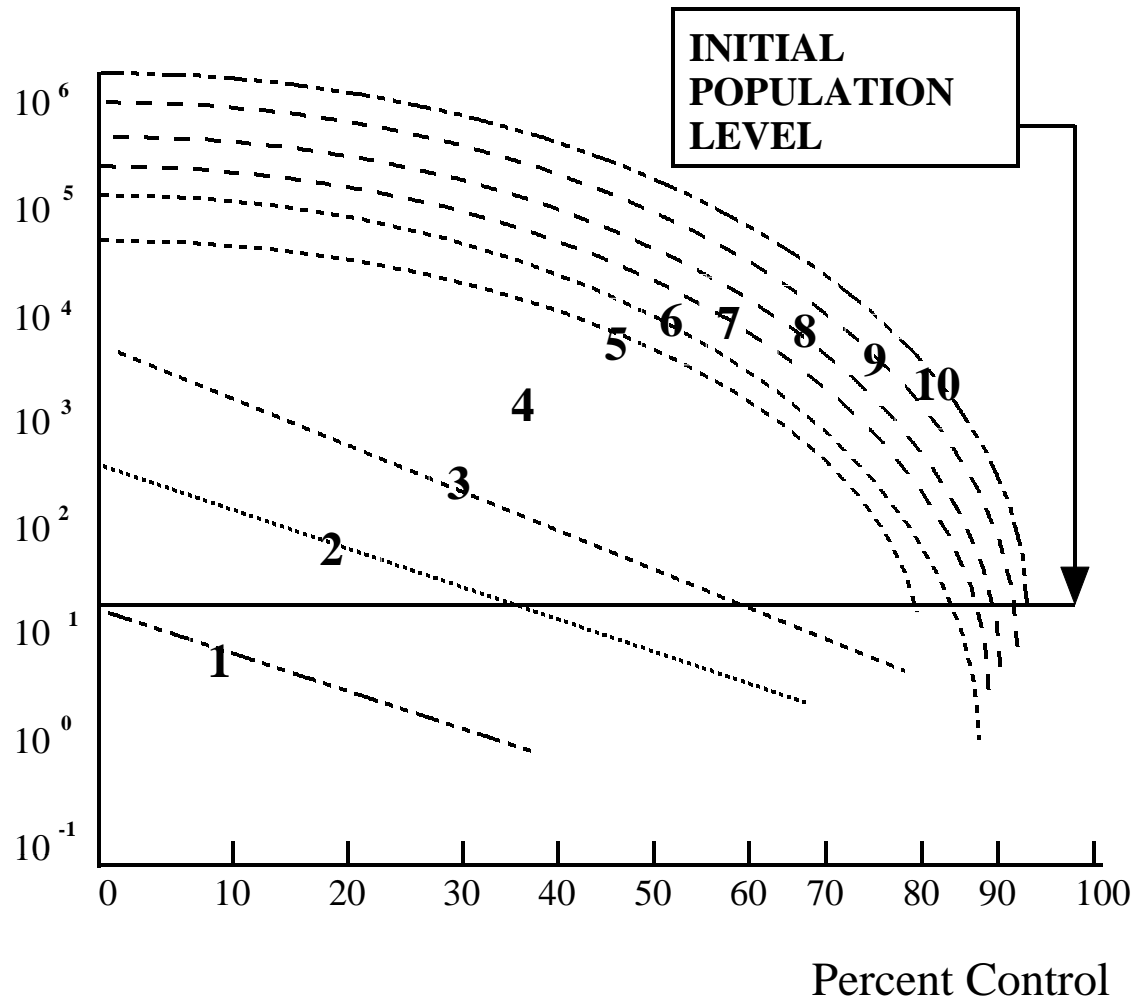


Fig. 2.1. Final populations after 5 generations from an initial population of 10 (for example, a 0.2 km² swarm of 10 million locusts) with various multiplication rates per generation (1-10) and various levels of control (0-100%)

Table V-6

COMPARISONS OF DIFFERENT L/G CONTROL AND PREVENTION STRATEGIES						
(Material in table is presented to show how the table works, and to provoke debate.)						
	DO NOTHING	CROP PROTECTION	PLAGUE CONTROL	LATE UPSURGE CONTROL	EARLY UPSURGE CONTROL	OUTBREAK CONTROL
Control Benefit (current infestation)	Zero	High	High	High	Medium	Low
Prevention benefit (future infestations)	Zero	Zero	Low	Medium	Medium	High
Financial cost	Zero	Medium More frequent	High Infrequent			Low (system view)
Environmental cost	Low	Medium	High Infrequent	Medium	Low	Low
Health cost	Low	High Farmers involved	High Near people	Medium	Low	Low Away from people
Group that does it best		National Crop Protection Unit, Farmers				

VI. MODES OF DELIVERING SUPPORT TO L/G CONTROL EFFORTS

This chapter is divided into two main sections: Collaboration among donors and Collaboration with African partners.

A. Collaboration among Donors

1. Collaboration with FAO

a. Progress

AELGA has exercised leadership in creating collaborative mechanisms among FAO donors on l/g prevention-control matters. Policy areas where progress has been made are:

- inclusion of donors in the Desert Locust Control Committee;
- donor participation in the l/g Technical Committee;
- renunciation of dieldrin use, acceptance of environmental requirements on pesticide use, innovative pesticide sharing and disposal arrangements (triangulation).

b. Areas Pending

Areas pending *when the evaluation team visited FAO* and talked to donors were:

- acceptance and funding by other donors of the EMPRES project; and
- economic and agricultural thresholds for determining where and when to carry out control and prevention of l/g infestations.

Since the evaluation team's field work there has apparently been progress on the above areas cited above.

c. Prevention vs. Proaction:

Although there is general (but not unanimous) agreement among donors and at FAO in favor of preventive approaches to l/g control, there are differing points of view and lively debate on what prevention and proaction mean in a concrete sense. The term "proaction" and that "proaction" is new and different from "prevention," was never mentioned at FAO, among donors, or in the field. *Within FAO investment, there is a definite trend away from pesticides, flying hours, other emergency measures and toward investment in l/g prevention mechanisms such as training and technical assistance.*

d. Field Coordination

The evaluation team looked hard for examples of field coordination in the countries visited, in particular with regard to pesticide disposal and response to emergencies and could find little. AELGA maintains that field coordination is substantial. Though both AELGA and FAO/Rome are positive in their position as to the degree of donor nation coordination, what may seem positive at the DLCC level may not reflect what is actually occurring in the field.

e. FAO's Leverage in L/G Control-Prevention Matters

FAO as an organization has made a commitment to addressing the l/g problem and is recognized by countries and donors as the coordinator of l/g efforts.

FAO's role with regard to l/g control has traditionally included: 1) disaster assistance in the form of pesticides and flying hours; 2) monitoring, disseminating data through the DLIS and its bulletins; 3) acting as secretariat for Regional Desert Locust Control Commissions; and 4) sponsorship of other meettion can be achieved. For now, *proactive control* is the only practical strategic framework available; exploration for tactics should aim at safely, effectively and efficiently locating and controlling locust within a dynamic and flexible program tailored to meet diverse scenarios." (*Proaction: Strategic Framework for Today's Reality*. 1994, p. 6)

b. The Nature of EMPRES

- EMPRES is *not an organization but a program* and the nature of EMPRES is not at all certain. The accepted goals and objectives were first drafted by the Technical Group of the DLCC (which includes AELGA's senior technical advisor). The plan is in its final stages of development. (AELGA reaction to the evaluation draft, p. 26, November, 1995)
- EMPRES *will not* provide training and research. It will, instead, coordinate activities being carried out by donors and by locust affected countries. (AELGA reaction to the evaluation draft, p. 27, November, 1995)

c. Sustainability and Recurrent Costs

EMPRES aims at sustainability and will focus foremost on *sustainable facilitation, coordination and catalysis of national crop protection services* while using or modifying regional organizations (most of them currently highly problematic, such as DLCO) as appropriate. (AELGA reaction to the evaluation draft, p. 27, November, 1995)

The (evaluation) report states that "due to its financial and political situation and budgeting procedures, USAID cannot commit to long support for EMPRES. *USAID has been supporting locust control and sustainable development of preventive and proactive control for more than 8 years through AELGA alone.* This sort of second guessing is not based on an analysis of USAID aims, objectives and foci. (AELGA reaction to the evaluation draft, p. 28, November, 1995)

d. Economic Criteria and EMPRES's Acceptance

In December 1994, the technical advisor to the AELGA project collaborated with other major donors concerned with locust outbreak issues at a formal FAO meeting on a long-term strategy for the prevention of locust plagues. *The donors collectively agreed that such a strategic plan would not be supported until data on the economics of locust plagues and control programs has been compiled to justify investment in such a venture.* During the FAO meeting, the donors made this prerequisite clear and the donors even indicated that they could fund such an effort once FAO had devised a plan by which to carry it out. The donors are currently pressing FAO to generate a study that may, according to FAO, require several years to complete. Once a proposal or plan is presented to the donors, USAID should move to co-fund through a grant once the proposal is deemed to be technically acceptable. (1995 Work Plan p. 7, 8)

Further the (evaluation) report states that acceptance and funding by other donors of the EMPRES project are still pending and that "agreement among donors at the strategic level is not any time soon." *EMPRES has been fully accepted and funding has been pledged by donors other than USAID.* (AELGA reaction to the evaluation draft, p. 27, November, 1995)

e. AELGA's Role in Planning and Promoting EMPRES

The (evaluation) report notes that "things to be done by EMPRES are only broadly outlined in FAO's program proposal. Prior to support of the proposal, USAID should insist on additional detail as to what is to be done, how it is to be done and where it will be done and who will do it" without any reference to the many international conferences attended by AELGA staff where these very topics have been discussed at length. The report in other words, assumes that AELGA has nothing to do with the beginning and subsequent development of EMPRES. (AELGA reaction to the draft, p. 28, November, 1995)

f. EMPRES Headquarters

In response to an evaluation team comment regarding the need for an EMPRES regional office, AELGA responded as follows:

That the evaluation team questions the need for an additional FAO office within the area to house the EMPRES is inappropriate and it presupposes the requirements and possibilities for EMPRES with insufficient information to make such conclusions. (AELGA reaction to the draft, p. 27, November, 1995)

On the same topic, a FAO trip report says:

The reporter asked the Minister what the Government's attitude would be if Asmara should be selected as a suitable locations for the EMPRES field programming headquarters. He said that Eritrea would be pleased if the headquarters was placed in Asmara and would provide what support it could. (*FAO Trip Report Regarding the Eritrea Locust Outbreak of 1995.* p.6).

3. Country Level Coordination

a. The Country Coordinating Committee (CCC) Requirement

The USAID L/G Management Guidebook outlines the conditions and limitations of the Agency's participation in l/g control. A pre-condition to USAID participation is the establishment, by the host country of a Country Coordinating Committee (CCC) and an operations center run by the nation's Plant Protection staff, with technical support provided by donors and FAO. According to the guidebook, the CCC should develop country action plans and forward them to FAO as a basis for an appeal for donor support.

USAID Missions should prepare their own action plans. Both the Africa Bureau Strategy Paper and the AELGA Project Paper reiterate this requirement.

b. Compliance with the CCC Requirement

FAO staff say that they often fail to receive CCC's although nations come forward to request assistance. Even without such documentation, FAO may move ahead with assistance requests.

In Mali, the CCC is apparently operating well. During this l/g recession period the committee continues to meet at one month intervals.

In Eritrea, the evaluation team was told that no CCC has yet been established, although AELGA does not agree with this. Eritrea does have a ministerial Task Force consisting of the Ministers of Agriculture of Ethiopia and Eritrea and the Director of DLCO-EA. This task force has appointed a three person technical task force; one from each of the MinAgs and one from DLCO-EA. The Eritrea MinAg does report regularly to FAO Rome. From several sources the evaluation team heard that GTZ wanted to contribute insecticides to combat the 1995 upsurge, but had not been contacted.

The evaluation team saw very little evidence of coordination between donor nations in Madagascar. GTZ reported almost no contact with the ALGEA contracted MSU bio-control operations in Toliara. Yet, the work that GTZ staff was doing on biologicals and chitin inhibitors provided the impetus for AELGA to begin participation in biological control research in 1992.

4. Rapid Response and Disaster Assistance Mechanisms

a. The September, 1995 Upsurge in Eritrea

The process by which l/g infestations are declared disasters and disaster assistance resources are authorized has a direct bearing on AELGA accomplishments of its Goal level objectives. The "special dispensation" given AELGA in terms of funds and freedom from USAID development project requirements was justified in large part by the idea that "proactive" l/g control would preempt plagues and preclude expenditure of disaster assistance funds.

AELGA Version: When word came in from the U.S. Embassy in Eritrea that a disaster was to be declared, AELGA immediately contacted OFDA to indicate that this was not really a disaster at all. At AELGA's urging through USAID/Eritrea, the U.S. Ambassador agreed to postpone the declaration for a week. At week's end, the disaster was declared and \$25,000 was provided — a truck was procured locally with these funds. (AELGA reaction to the draft evaluation report)

Evaluation Team Version: Before the recent infestation in Eritrea was controlled, emergency assistance in the form of insecticides was requested of OFDA, by the U.S. Ambassador, at the urging of USAID/Eritrea with whom AELGA works closely. The emergency assistance was

deemed necessary by USAID/Eritrea due to the perceived inability of AELGA and FAO to send insecticides with sufficient rapidity.

There was coordination among national organizations and DLCO, in response to the locust upsurge, but perhaps not enough coordination among donors. The Germans were interested in donating insecticides, but were never asked to participate.

5. AELGA Activities Through Bilateral Missions

In the countries visited by the evaluation team, AELGA's rapid response capability to l/g upsurges and plagues is highly valued by USAID Missions. There is, however, little interest in including AELGA l/g research and training activities as formal components of Mission portfolios. In two of the countries visited (Mali and Madagascar) inclusion of an AELGA-supported project was considered for the Mission portfolio, but rejected due a lack of fit with strategic objectives. If there were a sound agri-economic justification allowing connection to USAID Mission strategic objectives, the situation could change.

B. Conclusions

■ Collaboration with FAO:

Donor coordination at this point includes many meetings, committees, memos and international fora. There is a philosophical agreement among donors and at FAO that prevention is preferable to reaction to plagues, but there is still lively debate on prevention means in a concrete sense.

Within FAO investment, there is a definite trend away from pesticides, flying hours and other emergency measures and toward investment in l/g prevention mechanisms such as training and technical assistance.

Donor coordination at this point does not seem to include strong donor coordination at the country level or division of labor among donors. Efforts are being made in the areas of pesticide disposal and studies of economic criteria for guiding l/g control efforts. Table VI-1 is a tool which might be used at the regional and country level to analyze division of labor and determining who is good at and interested in what.

FAO presence in the field is variable and often spread thin across a range of technical areas. This may change with the advent of the EMPRES project.

The verdict is still out on whether AELGA's investment in collaboration with FAO is cost-effective in terms of concrete results.

■ EMPRES (the Emergency Prevention System with FAO):

- EMPRES will focus foremost on sustainable facilitation coordination and catalysis of donor and national crop protection services while using or modifying regional organizations (most of them currently highly problematic, such as DLCO) as appropriate.
- EMPRES does not promote preventive control, as implied in the title, but rather proactive control.
- EMPRES is not an organization, but a program.
- EMPRES will not do research and training.
- Consideration is being given to setting up headquarters in Asmara, Eritrea.

■ Country Level Donor Coordination

Though both AELGA and FAO/Rome are positive in their position regarding the degree of donor nation coordination; what may seem positive at the DLCC level seems not be reflected in what is occurring in the field, at least in the countries visited by the evaluation team.

Table VI-1

DIVISION OF LABOR ANALYSIS FOR DONORS TO L/G PREVENTION AND CONTROL

	France	Italy	Germany	Netherlands	UK	USA
Research on Bio-control Economics						
Training and institution building						
Pesticide disposal						
Participation on Country Coordinating Committees						

The Country Coordination Committee requirements in the L/G USAID Management Guidebook are not being fully carried out in some countries.

■ **Rapid Response Mechanisms**

The rapid response mechanism among AELGA, FAO, USAID/Eritrea, OFDA and the U.S. Ambassador did not work smoothly in Eritrea. There is little clarity on what is and is not an l/g disaster and on who is responsible for what. If a 30,000 Ha infestation is a disaster, then OFDA is in for a long year. There may be as many as 10 or more "disasters" per year in the region, if the Eritrea definition is accepted. Among the players in rapid response, AELGA is the best placed to fix it.

Over-estimates of the magnitude of infestations, budgets to combat them and use of disaster funds for non-disaster purposes may be the rule rather than the exception.

■ **Inclusion of AELGA in Bilateral USAID Mission Portfolios**

In spite of AELGA's transition from emergency relief to preventive approaches to l/g infestations, AELGA's major attraction for USAID Missions continues to be rapid response to l/g emergencies.

USAID reengineering and bilateral Mission strategic objectives, which tend to be medium term and of an economic or environmental nature, operate against inclusion of AELGA activities in official Mission portfolios. Examples among the countries visited are: Mali and Madagascar, where support for AELGA training and research were considered for mission portfolios and rejected.

C. Recommendations

■ **Collaboration with FAO**

AELGA activities in relation to the activities of other donors and FAO should be tabulated similar to Table VI-1. The table should be filled out on a regional and country-by-country basis.

■ **EMPRES**

- The evaluation team has the same questions regarding EMPRES as the questions it has about AELGA. That is, what is the technical, institutional and economic feasibility of the "proactive" approach to reducing the frequency and size of l/g plagues and the damage they do. Also, to what extent does AELGA appear to be making a long-term commitment with FAO on USAID's behalf?
- With regard to EMPRES, there are additional concerns regarding:

- Unknown recurrent costs to support the program until its l/g prevention objectives are accomplished. To what extent is AELGA making a long-term commitment with FAO on USAID's behalf?
- What will be the division of labor and responsibility among EMPRES, AELGA, the Desert Locust Control Commission and the FAO regional commissions? Will the coordination role of the FAO regional commissions be diluted or duplicated by EMPRES?

■ **Country Level Coordination**

- AELGA should make sure that the CCC guideline conditions, as outlined in the USAID L/G Management Guidebook are adhered to when AELGA grants are involved and that USAID approves the activities and methods to be utilized before FAO allocates funds which involve control action. According to the Guidebook, the CCC should develop country action plans and forward them to FAO as a basis for an appeal for donor support. USAID Missions should prepare their own action plans. Both the Africa Bureau Strategy Paper and the AELGA Project Paper reiterate this requirement.

■ **Rapid Response Mechanisms**

- Redesign rapid response mechanisms and division of responsibility. AELGA should advise OFDA, U.S. embassies, and USAID missions regarding the seriousness of outbreaks and whether or not in AELGA's perception, these outbreaks constitute disasters.
- AELGA and USAID need to set up an emergency fund to be used for control operations *only*, not to be used for training, research, awareness. Funds are released from this fund only after an approved, detailed plan of worked has been developed and approved by the Minister of Agriculture of the host country and the USAID Director.
- AELGA should design standardized, rigorous procedures for estimating the seriousness of l/g infestations and the resources and budgets needed for combating them.

■ **Inclusion of AELGA in Bilateral USAID Mission Portfolios**

- AELGA's future should be developed at the Regional or preferably the Global level, in accordance with current reengineering processes within USAID.
- Widespread inclusion of AELGA in official bilateral mission portfolios would be greatly facilitated by sound agri-economic justification for "proactive" control of l/g.

D. Collaboration with African Partners

1. Collaboration with Specific National Crop Protection Services

Topics included in this section are:

- National crop protection services visited by the evaluation team.
- The sustainability of l/g control mechanisms within national crop protection services.
- The fit between l/g prevention or proaction and the mission of national crop protection services.

a. Two National Crop Protection Services Visited by the Evaluation Team

Mali: At the time of the evaluation team's visit, contact with AELGA consisted primarily of MSUs bio-control research activities. Previous to 1988, the Mali crop protection service received substantial assistance in terms of training, equipment and technical assistance. In Mali, a sizeable AELGA project for strengthening in l/g prevention and control was turned down by the USAID Mission in 1989 or 1990. Mali's l/g action plan had depended on receiving the USAID support. Currently, without AELGA help, l/g prevention-control seems to consist of identification of hoppers, laying areas and outbreaks by farmers and the military and SPV teams and village brigades which dig up egg pods as a prevention measure. Malian professionals are excited about this approach. This excitement may originate with courses taught with AELGA support in 1991. However, the evaluation team entomologist says digging up egg pods is of limited use.

Madagascar: Presently, AELGA support for l/g efforts in Madagascar is limited to bio-control research. In the past:

AELGA and USAID/Madagascar, through a resident locust control coordinator, provided assistance to the crop protection service and helped the crop protection service to conduct survey and control of locusts, particularly during the outbreak of 1992-1993. Between 1992 and 1993 alone, USAID/Madagascar's AELGA Project funded more than 310 flight hours for helicopters, 187 flight hours for fixed wing spray aircraft and 241 flight hours for fixed wing survey aircraft. (AELGA reaction to the draft evaluation report, p. 44)

Among the countries visited by the evaluation team, Madagascar seems to have the best designed l/g prevention system and may serve as a good point of comparison when studying other systems. The system was established by the French and is now assisted by GTZ. Within the crop protection service, there is a system specific to l/g. The prevention approach focuses in the south where the locusts originate but do not cause damage. The system consists of early warning, prevention through elimination of small outbreaks and control of larger, economically damaging upsurges. Its major components are:

- Early warning through 17 observation posts, 7 of which deliver infestation and rain fall data on warning cards. Prevention activities are undertaken when there are 2000 locusts per hectare and 50 and 200 mm rain per month, which are apparently the optimum conditions for rapid l/g multiplication. The criteria were established through a 1993 study by FAO.
- Prevention of upsurges through control of outbreaks and laying areas makes use of three mobile ground teams and 17 observation posts.
- Control of upsurges is done through contracts with a local airplane company which does the spraying.

■ **The Sustainability of L/G Control Mechanisms within National Crop Protection Units**

- *Worrisome anecdotes from a sustainability viewpoint:*

Mali: The Crop Protection Service feels seduced and abandoned because during the 1984-1989 upsurge they received substantial support from AELGA and since then they have received nothing. They feel they have gone backwards and remember the good old days, when there was a plague and support from AELGA.

Eritrea: The Crop Protection Service got very excited about the possibility of the U.S. Ambassador declaring a disaster and the possibility of getting needed equipment. A disaster was eventually declared, after the upsurge had been controlled and \$25,000 of disaster assistance money arrived. The money was apparently used to buy a truck, obviously of great use but in conflict with the concept of disaster assistance. The argument that it is for "future disasters" is problematic.

Madagascar: GTZ, which gives long term support to the Crop Protection Service, has decided to provide no more trucks or equipment to the service, because there is no provision for maintenance and repair.

The evaluation team who made the above visits has spent a total of 50 years between them listening to stories like the above from crop protection and other extension services in Africa and elsewhere in the developing world.

■ **The Sustainability Situation in Niger**

AELGA staff recognizes, in the case of Niger where AELGA has invested significant effort and resources in institutional strengthening, the fragility of crop protection services in general and of l/g prevention activities in particular.

Locust and grasshopper control involves vigilant surveillance, monitoring and preventive intervention as well as emergency response. The overriding goal is the complete evolution from emergency intervention during plagues to preventive pest management. . . While USAID (through AELGA) and other donors have made significant progress in the development of Niger's crop protection services, the objective of securing a

preventive strategy has not yet been attained. Were USAID and DPM not to continue support for pest management activities, the achievement of this goal would certainly be precluded. (*The Niger African Emergency Locust/Grasshopper Assistance (AELGA) Project Evaluation*. AELGA, June, 1994).

■ **The Condition of National Crop Protection Services Throughout Africa**

Grasshoppers & Locusts, published in 1993 by The Panos Institute (with AELGA support) devotes a chapter to institutional aspects of l/g control. The plight of national crop protection services in Africa is described as follows:

The national crop protection services are now the main organizations responsible for grasshopper and locust control in most countries because of their mandate to protect crops. But the Sahelian states are among the poorest in the world. . . National budgets are under immense strain. Not surprisingly, agricultural extension and plant protection services suffer under immense constraints. (The Panos Institute, 1993 p. 79)

General observations regarding national crop protection services are also made in the introduction to the book: *Desert Locust Control: an Evaluation of Strategies*.

After 40 years of building and implementing regional cooperation in locust surveys and control, a substantial part of the operational activities has reverted to individual countries. Very few countries are sufficiently organized, staffed and equipped to face this challenge, however, especially when there is no form of external assistance to strengthen their national plant protection service. (Proceedings of the Seminar held in Wageningen, The Netherlands, December 6-11, 1993. p. x.)

Volume after volume of similar material can be found in evaluations of USAID and other donor efforts to strengthen African extension systems and crop protection services in particular.

b. The Fit Between L/G Prevention or Proaction and the Mission of National Crop Protection Services

The evaluation team believes that in many instances, especially in Africa, the basic charge of Crop Protection Services is to protect a nation's agricultural crops from a wide variety of pests, so they must direct their activities to within or in close association to cropland. In many instances this may be alien to a prevention program, for the desert locust is a desert insect principally and much of its primary seasonal breeding and populations are in remote desert locations.

AELGA staff maintains that:

"This is an old argument which is proven false by the actions of the national crop protection services themselves. During the proactive 1992-1994 campaign, Chad, Mali, Niger, Sudan Eritrea, Yemen, Ethiopia, Mauritania, Senegal, Morocco, Egypt, Saudi Arabia, Pakistan and India all relied on their crop protection services for survey and control (AELGA reaction to draft report, 1995, p. 34).

An important factor is the extent to which crop protection units have personnel posted in remote areas where l/g swarms often originate. The evaluation team can name only the following African nations that have personnel posted in what can be considered truly remote areas: Libya (Ghat) and Mauritania (Ain al Atrous) where principal croplands do

not exist. Other nations with specific l/g units have personnel posted on the edge of wilderness, but in principal cities and towns where facilities and amenities are available (Timbuktu, Mali; Abache, Chad; El Hasher, Sudan are examples).

Evidence in support of the evaluation teams point of view appears in "*The Inventory of Survey and Control Capacity of Desert Locust Affected Nations*." (The inventory was conducted at the Planning Meeting for the 1988 Desert Locust Campaign in West and Northwest Africa" at FAO in Rome on 10, December, 1987.)

Mali: Unable to mount any significant survey or control operations in the main breeding areas in the northeast of the country.

Niger: In the process of establishing national anti-locust unit comprising 3 survey and preventive control teams.

Ethiopia: No separate locust unit; most survey and control undertaken by DLCO-EA.

Somalia: Very weak locust uni; most survey and control undertaken by DLCO-EA.

Yemen Arab Republic: Locust section being reorganized and expanded; new staff being trained. Capacity for large scale control unproven.

Pakistan: Large and experienced locust section capable of controlling large scale infestations.

Saudi Arabia: Well-equipped and well-organized (paragraphs 22-42 of the meeting report).

The above material is out of date and superficial, but that is not the point. The point is that USAID has Project Paper procedures and requirements for carrying out institutional inventories and recurrent cost analyses before embarking on and committing to, the strengthening of institutions.

2. Collaboration with Regional Organizations

Topics covered in this section include:

- evaluation team assessment of DLCO-EA and its utility; and
- AELGA and EMPRES relations with DLCO-EA.

a. Evaluation Team Assessment of DLCO-EA and Its Utility

- **Client Nations**

In eastern Africa the member nations of DLCO-EA rely to a great extent on that organization to protect them from Desert Locust. Some DLCO-EA member nations (Kenya, Uganda, Tanzania, Sudan) are also members of the International Red Locust Control Organization (IRLCO) and the FAO Near East Regional Commission.

Though Sudan has a strong Crop Protection Service, with an operational unit designated for l/g control and which is capable of substantial action against locusts and Ethiopia has a small l/g unit with limited capabilities, the remaining member nations are almost without specific l/g control capability and must rely entirely upon DLCO-EA.

As there has been no Desert Locust invasions of Kenya, Tanzania or Uganda since the 1950s, the major fund contributors have cut back on their payments which is severely affecting DLCO-EA's capacity to produce. FAO, though recognizing the desirability of DLCO-EA has reservations as to its survivability without new income sources.

- **DLCO Weaknesses**

Lack of member nations' financial support has had a significant effect on DLCO-EA's capabilities. Their operational funding is down to about \$2.2 million from nearly double that of a few years back. A sizeable portion of this comes from buy-ins for their services. Kenya is in arrears about \$5 million and Tanzania, Uganda and Djibouti no longer pay anything. This has forced a major reorganization of DLCO-EA and it has reduced the number of staff members to 134 from a high of 255. DLCO-EA has lost much of its survey and ground control capability and must rely primarily on the national Crop Protection Services for these activities.

DLCO-EA has need for an infusion of new blood into the organization but, without additional financial support from the member nations this does not seem probable. New employees do not remain long when they go for months on end without salary payments. DLCO-EA is provided outside assistance in terms of pesticides, vehicles and other equipment from donor nations, but these resources do not pay employee salaries and per diem.

- **The "Success is Your Worst Enemy" Syndrome**

It is somewhat ironical that organizations that are successful in their endeavor to control the locust problem are penalized for success. DLCO-EA has been successful in protecting East Africa from locust attack for over 45 years. The reward for which is reduced financial support. This could be called "working yourself out of a job."

Similar responses have greeted the International Organization for Control of the Migratory Locust (OICMA) which is now out of existence due its successes and OCLALAV in west Africa who's existence is hanging by a thread. It speaks to the need of independent international organizations for successful implementation of preventive control.

- **DLCO Utility**

Preventive control in the Central Region (Red Sea, Arabian peninsula and Gulf of Aden area) is dependent upon a strong Regional Organization with aerial control capabilities, rapid mobility within and between nations and experienced, well-equipped ground forces capable of prolonged action in remote locations.

DLCO-EA aircraft have quick access to the nations of Yemen, Oman and Saudi Arabia. If USAID agrees to participate in EMPRES, AELGA could assure the continuation of DLCO-EA through insistence that EMPRES will be the primary unit to be called upon for control in the Arabian peninsula and to include financial support provided by these nations which might represent partial salvation for DLCO-EA.

b. AELGA and EMPRES Relations with DLCO-EA

So far AELGA has concentrated its efforts on National Crop Protection Services and done relatively little with regional organizations. In the context of EMPRES, it seems that AELGA, in concert with FAO, plans to do more with regional organizations, or at least with "regional functions"

EMPRES aims at sustainability and will focus foremost on sustainable facilitation, coordination and catalysis of national crop protection services *while using or modifying regional organizations* (most of them currently highly problematic, such as DLCO) as appropriate. (AELGA reaction to the draft evaluation, November, 1995, p. 27.)

AELGA has, in fact, made overtures to FAO and the donors to explore ways in which the dilemma of DLCO can be approached, if at all. *Recently FAO has informally agreed to begin searching for a way of preserving the function of DLCO in the region.* In fact, discussions are underway about DLCO functions being maintained to support EMPRES activities. (AELGA reaction to draft evaluation, p. 33)

Only two aircraft are available in December. . . this could become a major constraint on the efficiency of preventive control for the Region as a whole. The matter needs to be looked into urgently. Showler said that perhaps it was time for donors to get together again under FAO's coordination to review DLCO's progress in staff and cost-cutting, with a view to setting it back on its feet at a level sustainable by member countries. (*FAO Trip Report Regarding the Eritrea Locust Outbreak of 1995.* p. 6)

Without knowing more about AELGA's plans regarding regional structures, the evaluation team cannot comment. Suffice it to say that the combination of FAO, facilitation, coordination, catalysis, research, training and establishment of headquarters in the region where l/g swarms originate is challenging and deserves careful analysis.

3. A Broader Perspective on Collaboration with African Organizations

Grasshoppers & Locusts, published in 1993 by The Panos Institute (with AELGA support) devotes a chapter to institutional aspects of l/g control. The dilemma by donors in having to make a difficult decision between drying regional organizations and weak national crop protection services is described as follows:

Since the mid-eighties the general shift of responsibilities from regional to national level - a move aided and abetted by the donors — the role of regional organizations has been continuing to evolve. Ironically, it has been easier to evaluate the work of these organizations by their absence than by their activity. During the 1986-1988 plague, it was clear that the absence of effective regional coordination made control more difficult.

But regional organizations possessed certain advantages for working within and between states, advantages which have become clearer as the national services have struggled to take on some of their functions. (*Grasshoppers & Locusts*, The Panos Institute, 1993. pp. 75-77)

a. A Dilemma

On the one hand, the evaluation team shares the Panos Institute book's assessment that donors are faced with a difficult decision between dying regional organizations and weak national crop protection services with little coordination among them.

We are also aware that the current trend among donors interested in the l/g problem is away from regional organizations and in favor of national crop protection units.

On the other hand, the evaluation team shares the Project Paper's doubts regarding a return to an approach based on strengthening of national crop protection services without serious analysis of the initial and recurrent costs of putting lessons taught in the training into practice.

We doubt that several-week training programs for national crop protection services is a strong approach for reducing the size, frequency and impact of catastrophic locust plagues. Our hypotheses is that the effect of the training will be limited to mitigating the immediate damage done small or medium sized l/g infestations.

The basis for the above concerns is founded in USAID's vast and well documented experience and the evaluation team's decades of experience working on and evaluating efforts to strengthen agricultural extension services in Africa and elsewhere.

The reader is reminded that the AELGA Project Paper said the following:

"The recommended locust/grasshopper control program, plus the long term institutional development of national plant protection service. This approach has been considered and rejected for two inseparable reasons. First, the process of trying to carry out the institutional development of national plant protection services has been attempted many times by many donors. Given their destitute financial position, the host countries just can't afford the recurrent costs consequently generated. Thus, such activities are of low priority in most USAID Country Development Strategy Statements." (pp. 36, 37)

The reason USAID has procedures and requirements for institutional strengthening is not bureaucratic. The failure of donor-supported national agricultural extension agencies to solve agricultural problems is a distressing aspect of USAID's and other donors' histories.

It is the evaluation team's view that any project which proposes to "buck this trend," must do very careful analysis and have a good argument why "it will be different this time."

b. Institutional and Recurrent Cost Analysis for an L/G Control System

Some specific hypotheses must be tested:

- The relation of AELGA's strategy of strengthening national crop development units and its relation to AELGA's objective of reducing the frequency and size of

l/g plagues and the damage done by them, needs serious analysis and re-consideration. Specific hypotheses which must be tested and proved are:

- Extensionists, agents and farmers, can reach to the high kill rate on swarms which is necessary to reduce the frequency, size, intensity, damage from future upsurges and plagues.
- Crop Protection Services personnel can leave their cropland posting for long, difficult periods of desert travel, and are, or can be, equipped to do so.
- Or conversely, prove that long difficult periods of desert travel are not necessary reaching proaction/prevention objectives;
- Crop Protection Service participation in l/g control of a proactive or preventive nature does not detract from the carrying out of other crop protection which are: 1) as or more important than l/g control to agriculture and farmers' economics and well being; 2) but less well funded, equipped and supported with training by donors.
- **Institutional Obstacles:** Before embarking on strengthening a network to reduce l/g plagues and the damage they cause, a careful institutional inventory, institutional analysis and institutional strengthening plan is needed. Some institutional obstacles which must be *systematically* analyzed and solved in implementation of AELGA's l/g proaction strategy are briefly discussed below and include: recurrent costs, technology transfer systems, dependence on dying or defunct regional organizations, hostility within and between nations, unwise government policies and inter-disciplinary collaboration.
- **Recurrent Costs:** There is a need to analyze the expenditure necessary to maintain systems that AELGA puts in place; plan how to cover the costs; and abandon systems which impose costs that cannot be covered. Otherwise, national crop protection agencies will experience a brief period of glory while they receive training, equipment and technical assistance and then return to their original state only remembering the "good old days". (The evaluation team saw a classic example of this phenomenon in Mali.)
- **Inadequate systems for technology transfer from research to control organizations, extension services to farmers and reverse.** The lack of substantive extension services in many African countries is a major deterrent to downward and upward communications. The technology that has been transferred downward has often been inappropriate, yet has been instilled in the minds of poorly educated or informed farmers as a viable and necessary approach to the protection of their crops from l/g attack. An example is the encouragement of individual or groups of farmers to seek out, dig up and destroy egg pods; a tedious and time consuming task with little practical effect on l/g population control. Expenditure the same effort keeping his or her fields and field margins free of weedy vegetation and preserving a short grass cover on field margins would pay far greater dividends to the farmer.(USDA, Grasshopper Control Project directives, 1950s. USDA eliminated even egg pod survey in the early 1950s as being highly unreliable).

Much can be learned from the farmer. The knowledge that Neem (Gill, India Agricultural Research Service) and perhaps even Sesame (Showler, USAID) have repellent properties originated from farmers' experience.

- **Dependence on dying or defunct regional organizations.** At the time of the 1985-89 l/g control programs, many of the affected west African nations had very limited control capability. They had previously been protected by their membership in OCLALAV and relied on them fully for all phases of l/g control including survey and detection. But during a long period of scant l/g problem in the 1970s and early 1980s the organization's member nations substantially reduced its funds and limited its authority to data collection and monitoring with no field operations functions. Nations never upgraded their own Crop Protection Services.
- **Hostilities within and between nations which inhibit access to some countries.**
- **Inadequate infrastructure and institutional capacity to plan (both short and long term) and implement programs.** In the Desert Locust infestation area of Africa only Morocco appears to have developed this capacity to a high degree.
- **Unwise government policies which reduce farmer incentives to take action on their own.** Government imposed prices for farmers' crops in order to assure satisfied urban consumers limits the ability of farmers to take actions to protect their crops from pests. A number of Sahelian countries have now or have had such policies in the recent past.
- **Inter-disciplinary collaboration:** Addressing and solving all the above problems requires interaction among hard scientists (biologists, botanists and meteorologists) with social scientists (economists and sociologists). Interaction by AELGA with meteorological, biological, environmental and agricultural disciplines has improved substantially in the past 2 to 3 years, but the economists and social scientists are still largely ignored.

E. Conclusions

■ National Crop Protection Units

The decision to make the training of national crop protection services central to AELGA's approach has large strategic and financial implications. It seems that the decision was made:

- in agreement with the approach adopted by the l/g community at this point in history;
- without reference to the strong admonition given in the Project Paper against investing in building national crop protection services;
- without the institutional, sustainability, recurrent cost analysis and without the institutional development plans USAID correctly requires for its development projects.

The evaluation team fears that the "proactive" approach will not reduce the frequency and size of large upsurges or l/g plagues unless funding by affected national governments and/or donors is large. The funding must be sufficient to maintain highly trained, well equipped l/g units (preferably separate from other crop protection units) ready to act quickly to suppress gregarious populations in advance of crop damage or migration — actions which may not be required until five or ten years from now.

If l/g control units are not a separate entity within national crop protection services, preferably with permanent outposts in l/g breeding areas, there is the risk that either crop protection duties will interfere with l/g "proaction" duties and/or vice versa.

■ **Collaboration with Regional Organizations**

Without knowing more about AELGA and EMPRES plans regarding regional structures, the evaluation team cannot comment. Suffice it to say that the combination of: *FAO, facilitation, coordination, catalysis, research and training and establishment of headquarters in the region where l/g swarms originate* is challenging and deserves careful analysis.

F. Recommendations

■ **Collaboration with National Crop Protection Services**

- AELGA should not offer l/g control training on demand for national crop protection services.
- Choose crop protection services for training in proactive control of l/gs according to whether they: 1) have a separate l/g control unit; 2) if l/g breeding areas are remote, they have agents stationed nearby; 3) the crop protection services are intrinsically strong and can put into practice the l/g control practices on a sustained basis; or 4) they receive basic institutional strengthening from another donor.
- The relation of AELGA's strategy of strengthening national crop development units and its relation to AELGA's objective of reducing the frequency and size of l/g plagues and the damage done by them, needs serious analysis and re-consideration. Specific hypotheses implied by the AELGA approach which must be tested and proved in general and on a case-by-case basis are:
 - Extensionists, agents and farmers, can reach the necessary high kill rate on swarms over wide areas.
 - Crop Protection Services personnel can leave their cropland posting for long, difficult periods of desert travel, and are, or can be, equipped to do so.
 - Conversely, show that long difficult periods of desert travel are not necessary reaching proaction/prevention objectives.

- Crop Protection Service participation in l/g control of a proactive or preventive nature does not detract from the carrying out of other crop protection which are as or more important as l/g control to agriculture and farmers' economics and well being but less well-funded, equipped and supported with training by donors.

■ **Collaboration with Regional Organizations**

Without knowing more about AELGA and EMPRES plans regarding regional structures, the evaluation team cannot comment. Suffice it to say that the combination of: *FAO, facilitation, coordination, catalysis, research, training and establishment of headquarters in the region where l/g swarms originate* is challenging and deserves careful analysis.

In general, institutional factors and obstacles which must be systematically analyzed and solved by l/g proaction or prevention programs include recurrent costs, technology transfer systems, dependence on dying or defunct regional organizations, hostility within and between nations, unwise government policies and inter-disciplinary collaboration.

VII. AELGA PROJECT MANAGEMENT

A. USAID Washington

Strategic Management: The most important aspects of USAID management of projects are strategic, not administrative, and AELGA is no exception. Strategic aspects of USAID management of AELGA are covered in Chapter III of this report, *Evolution of AELGA Project Design, Budget and Concepts*.

The "evolution" described in Chapter III is described in the October 1, 1994-March 31, 1995 Project Implementation Report as follows:

The original three year project was designed to provide a mechanism for control of locust and grasshopper plagues. The PACD was extended five times so now it is April 2, 1997. Notwithstanding the number of extensions, the Project Paper has never been modified to coincide with various recommendations of the past evaluations and assessments.

Financial Control: The same Implementation Report has the following to say about financial control of AELGA:

The total obligation under the project can only be estimated because none of the M/FM or M/OP systems have been able to track project commitments since AELGA's inception in 1987. In 1989 M/FM and M/OP systems each created new systems to record financial transaction or contracting actions, respectively. Commitment records from the early years of AELGA's history are missing from FM's FACS reports. Since the PIPE system uses the FACS system as a base for its report on obligations, the FACS errors are duplicated. Over \$4 million in commitment documents have been found that were purged from the FACS or never reported.

Project Evaluations: AELGA was begun in 1987, but until now has never been the subject of an "external" evaluation as usually defined. A member of the other "outside" evaluation was under contract to USAID and eventually became AELGA's Senior Technical Advisor.

Project Managers: There have been four project managers for AELGA since it started in 1987. During the last three years it has had three project managers and been located in three different bureaucratic entities of the Africa Bureau. Until the present project manager took over a year ago, there has been little strategic oversight of the program and its implementation by USAID. *For instance, calendar year 1995 is the first time the RSSA team has been asked to submit a work plan.* The present Project Manager is taking his responsibilities seriously and he is asking questions about all aspects and mechanisms for project implementation. There is a lack of clarity about where the Project Manager's responsibilities leave off and where the RSSA Senior Advisor's responsibilities begin.

B. AELGA (RSSA) Staff

There are four members of the AELGA team (engaged through a RSSA with OIC). They are an Entomologist Senior Advisor, an Entomologist Assistant Technical Advisor, an Ecotoxicologist Technical Advisor and a Project Coordinator. A weakness of RSSA staff seems be lack of

expertise and interest in social science (sociologists, economists and experts in institutional analysis and development).

A number of strategic decisions have been taken under the leadership of the Senior Advisor who has produced a number of articles for scholarly journals. These strategic decisions include:

- adoption of a "proactive approach" to l/g control;
- selection of national crop protection units as the focus of training in "proaction";
- USAID promotion of the EMPRES activity at FAO and among other donors; and
- focus of attention on the Horn of Africa — an area in which recent plagues have developed.

The ecotoxicologist has been with the AELGA project off and on since January 1991. He is the institutional memory for this project which began eight years ago. The ecotoxicologist is overseeing the bio-pesticide research being undertaken by Montana State University. He has also been involved with training activities associated with bio-pesticide research.

Since 1994, two members of the AELGA staff have been heavily involved in training. The Assistant Technical Advisor and the Project Coordinator have spent a substantial portion of their time planning and implementing training programs for crop protection agents. Given the AELGA staff's knowledge of the overall experience with pest control in Africa, it was appropriate that they develop and test the curriculum being used. They have also established the precedent of using host country personnel to undertake the training and have emphasized the training of trainers.

C. Administrative Aspects of AELGA Collaboration with FAO

1. FAO Perceptions of USAID

According to evaluation team interviews, FAO perceives USAID collaboration with FAO regarding l/g as follows:

Positive:

- AELGA/USAID was the first donor to put money up to support EMPRES;
- AELGA/USAID is carrying out important l/g bio-control research, has achieved registration of promising bio-control fungi and is remarkably open about sharing research findings;
- under certain situations, AELGA/USAID has allowed flexibility in resource use to adapt to changing needs.

Negative:

- Year to year funding decisions force USAID to appear to be short-sighted and unpredictable;
- USAID seems to be retreating from international and environmental commitments. This is ironic and sad because in the past the US was in the forefront and played the founding role in these areas.

2. The Nature of AELGA's Investment with FAO

AELGA collaboration with FAO during 1986-1988 was basically an emergency assistance effort. Collaboration since then has focused on prevention activities and on avoiding massive emergency assistance investments in insecticides and flight hours. This represents a healthy new model for FAO and AELGA was instrumental in establishing it.

3. USAID and FAO'S Financial Systems

FAO and USAID financial systems conflict in important and superficial ways. An important conflict is that FAO needs funds available before obligating them; while USAID only replenishes funds when the account with FAO is near empty. A superficial conflict is that USAID financial forms and categories are different from FAO's and require re-sorting and summing. (This is true for the CVG, not the ELCO emergency assistance accounts.)

FAO's finance office sends financial reports to USAID through the U.S. Permanent Secretary, but the information often seems not to reach the AELGA project manager in USAID. A parallel channel would be helpful.

D. Conclusions

For a number reasons USAID management of AELGA has appeared to be loose, especially from the strategic point of view. Reasons include: overwork, changes in project managers, changes in AELGA's placement within USAID structure, weak, out-of-date Project Paper and Logical Framework, changing financial tracking systems and pressure to spend money on activities that would avoid disasters, etc.

RSSA staff have played the roles of strategist, planner, implementer, and representative of USAID interests overseas and with FAO and other donors. Strategic decisions with long-term implications made by RSSA staff include:

- adoption of a "proactive approach" to l/g control;
- selection of national crop protection units as the focus of training in "proaction";
- USAID promotion of the EMPRES activity at FAO and among other donors.

USAID intentions with regard to collaboration with FAO on l/g control matters and in particular with regard to support of EMPRES, need clarification.

E. Recommendations

■ **Principles for Managing AELGA**

1. AELGA is an eight-year-old development project and must use and abide by USAID development project management tools and procedures.
2. AELGA is the project implementation team and USAID/DRC is the project management and administrator. What this means in practice needs to be worked out in detail.
3. All decisions of a strategic nature must be approved and signed off on by USAID/DRC. Particular care must be taken that AELGA does not make long-term commitments of USAID money and prestige, without full USAID/DRC understanding, agreement and official approval. (EMPRES may be an activity where this point is appropriate.)

■ **Systems and Tools**

1. The Logical Framework should attempt performance indicators for the various l/g control subsystems (early warning, national crop protection units, research, etc.).
2. Yearly work plans must be approved and signed off on by USAID/DRC. The main criterion for approval is clear contribution to the objectives of: 1) reducing the frequency and size of l/g plagues and outbreaks; 2) reducing the damage done by l/g plagues and outbreaks; and 3) reducing expenditure on disaster assistance.
3. Work plans must include expenditure of RSSA time on different tasks. In the current work plan, salaries of AELGA/RSSA staff are considered to have no cost. The scholarly publications in particular are presented as free. Judged by the current work plan, they cost USAID nothing. Other categories of work, where RSSA time is not included in calculations of cost to USAID, are donor coordination, networking and attendance at international fora. All costs to the products and services should be calculated and included in work planning.
4. AELGA/RSSA job descriptions should be reviewed and if necessary re-written in light of AELGA objectives.
5. It must be determined who is responsible for making sure l/g-related disaster assistance operations run smoothly and pesticides are applied properly, when USAID pesticides, money and other resources are donated.

■ **Qualifications for AELGA Project Manager (USAID Africa Bureau):**

The Project Manager should have:

1. an understanding of and dedication to USAID Africa Bureau objectives.
2. a background in managing and observing development projects from field and administrative perspectives;
3. expertise in the use of tools for planning and managing development and institutional development projects;

■ **Relations with FAO**

The USAID/Africa Bureau needs to clarify its intentions with regard to collaboration with FAO on l/g control matters. Issues are: level and duration of financing available for l/g activities. In particular, what will USAID's participation in EMPRES be over the short, medium and long term?

VIII. CONCLUSIONS, RECOMMENDATIONS, STRATEGY, ACTION

A. Chapter Organization

Part B presents a one-page overview of this formative evaluation of the AELGA project, including important conclusions, recommendations and important background. In Part C, recommendations are pulled verbatim from Chapters III through VII. The recommendations are presented unencumbered by other material and grouped according to when it is necessary and feasible to carry them out:

- short term (over the next six months);
- medium term (between now the PACD in April,1997); or
- long term (after 1997, in a subsequent project).

In Part E, decisions to be taken with regard to AELGA by the USAID Africa Bureau are presented and discussed.

B. Analytical and Monitoring Tasks

The recommendations contain many analysis and monitoring tasks, largely because AELGA is an eight-year-old, \$30,000,000 development project that has never had a real Project Paper, or feasibility analysis. As a result, the centerpieces of the AELGA project are uncertain and unproven:

1. "Proaction" as promoted, is a definition, but not a strategy in the sense that one can tell with certainty when it is being done or not done, or when it has succeeded or failed;
2. the argument made comparing the 1992-1994 upsurge with the 1984-1989 plague does not justify "proaction"; and
3. institutional development of national crop protection units as a focus goes against the Project Paper and USAID experience and seem overmatched against the "inexorable arithmetic" of l/g population dynamics, especially preceding major plagues.

Waiting for the final evaluation, or the next Project Paper to do the necessary analysis and evaluation is an alternative, but undesirable. For one thing, final evaluations almost never collect original data, but can only interpret data already available. Also AELGA dedicates considerable resources (it is not clear how much) to scholarly publications. Some of this time might be spent carrying out the analysis, monitoring and evaluation in this evaluation's recommendations.

C. Overview of this Formative Evaluation of AELGA

1. Immediate Changes

AELGA Management:

- Given "extraordinary dispensation" by USAID over 8 years and \$30,000,000.
- Must play by development project rules from now on.
- Needs Logical Framework, work plans and perhaps realignment of job descriptions.

L/g Control Mechanisms: With a "proactive" (as opposed to a prevention) approach, be prepared for frequent requests for aircraft and calls on aerial services and donors for reactive control.

- With a national crop protection service focus, even countries strong at l/g control will be at the mercy of neighboring countries' weaknesses.
- AELGA and USAID need to set up an **emergency fund** to be used for control operations only, not to be used for training, research, awareness.
- Funds are released from this fund only after an approved, detailed plan of worked has been developed and approved by the Minister of Agriculture of the host country and the USAID Director.
- The original emergency response mechanism may have atrophied.
- Definitions, procedures, division of responsibility among OFDA, AELGA and FAO should be re-designed.

Publications/awareness: Academic articles tangential to project objectives.

- Redirect resources to testing feasibility and impact of "proaction."

2. Proceed

Bio-control research: Perhaps the future of L/G control.

- Countries, USAID Missions, cannot support it.
- Fate should not be tied to AELGA, or the success of "proaction."
- Should have five-year funding and try to produce a series of bio-control products.

- USAID must also decide whether to be funder, or match-maker since this is an attractive area to other donors.
- Look at possibilities for building African research capacity, bio-control business.

Economic threshold research: Was a Project Paper priority.

- Necessary but progress poor in spite of much effort over the years by many.
- Co-fund FAO effort.
- Include models from the economics of disasters, natural resource economics.

3. **Proceed With Caution**

Training of and Collaboration with National Crop Protection Services

- Prohibited by Project Paper for sustainability reasons.
- Recommended without analysis by a semi-external evaluation.
- Has become centerpiece of AELGA approach.
- The alternative, regional organizations have been strong, but are now weak, not supported by donors or member countries.
- Training is good on own terms.
- Choose crop protection services for training in proactive control of l/g according to whether they:
 - have a separate l/g control unit;
 - if l/g breeding areas are remote, they have agents stationed nearby.
 - if the institutional strength of the crop protection services is sufficient to enable them to do l/g control on a sustained basis; or
 - they receive basic institutional strengthening from another donor.

4. **Analyze/Define**

"Proaction" approach: A definition, not a strategy.

- Define a strategy with objectives and success indicators.

- Budget for regional, aerial support needs re-analysis.
- 1984-1989 vs. 1992-1994 comparison does not prove that "proaction" works.
- Make best case for "proaction" on basis of 1985-1989 vs. 1992-1994 data or other data.
- Compare "proaction" to 1962-1985 approach that led up to 1984-1989 plague.
- Explain how "proaction" dampens "inexorable arithmetic" of l/g build-ups.
- **EMPRES:** No final proposal yet. Concerns about "proaction" and national crop protection units apply to EMPRES. What long-term commitments have been made on behalf of USAID?

Pesticide Disposal: Triangulation deals with future problems with excess pesticides.

- Leftover pesticides from the past are a major environmental problem which is largely donors' responsibility.
- USAID role *might* be to take the lead in catalyzing approaches, money.
- Start with an inventory of pesticides stored and the conditions of storage.
- Fits with the "treat recovery and rehabilitation" clause in AELGA Logical Framework Purpose.
- Institutional and recurrent cost analysis for: national crop protection units, aerial services, presence in remote l/g breeding areas.

5. Monitoring and Testing

Early Warning and Monitoring: This evaluation did only description.

Needs to be field tested. Explore additional technologies (historical wind trajectories, DNA, etc.)

Pesticide Management: AELGA should help DLCO avoid spraying errors with USAID-purchased pesticides.

Donor Coordination: Activities at FAO not reflected in countries visited.

- Country Coordination Committees need to submit and follow Action Plans.
- Focus on concrete, country level activities and serious analysis of division of labor among donors.

D. Action Plan Derived from this Evaluation

SHORT TERM: AELGA MANAGEMENT PRINCIPLES AND SYSTEMS

1. Management Principles

- a. Discuss, adopt development project principles.
- b. Analyze and formalize division of labor.
- c. RSSA Staff handles project implementation.
- d. Africa Bureau handles project strategic management.
- e. Define division of labor between RSSA and Africa Bureau.

2. System Installation (RSSA/Africa Bureau)

- a. A Logical Framework representing current strategy and objectives
- b. Progress monitoring system (basis = sub-system performance)
- c. Work plan preparation and approval completed
- d. Alignment of job descriptions

3. Analysis of RSSA Time use to determine:

- a. How much time is spent on writing scholarly articles?
- b. What is USAID policy with regard to underwriting academic articles?
- c. How does such writing fit with the Project Paper and the job descriptions of AELGA staff.
- d. Do the same analysis for donor coordination, networking, conferences.
- e. Include approximate RSSA time as costs in work plans.

4. Africa Bureau Decisions

- a. Decide whether AELGA must prevent plagues and disaster assistance expenditure, or a lesser objective is sufficient, to qualify as a special regional program.
- b. Draw lessons from evaluations of regional crop protection projects.
- c. Decide whether AELGA should limit itself to l/g control.
- d. Decide whether the Africa Bureau or the Global Bureau is the best place to locate AELGA given its objectives.

5. Strategy Definition

- a. Develop and formalize strategy based on the definition of "proaction," including objectives, success indicators.
- b. Explain the difference between "proaction" and the strategy used between 1962 and 1985.
- c. Explain the difference between "proaction" and the 1990-91 strategy for FAO put forth by Lucas Bader.
- d. Develop a Logical Framework representing current strategy and objectives.
- e. It must be made clear how to tell when "proaction" is and is not happening and how to distinguish between success and failure.

SHORT-TERM: L/G CONTROL SYSTEMS

1. Rapid Response and Disaster Assistance Mechanisms

- a. Redesign rapid response mechanisms, division of responsibility, definitions of disaster and within-country donor coordination.
- b. There must be an agreed upon and universally distributed definitions, mechanisms and criteria for: 1) delivery of insecticides by AELGA/FAO; and 2) disaster assistance from OFDA.
- c. AELGA should attempt standardized, rigorous procedures for estimating the seriousness of l/g infestations, the resources and budgets for combating them and criteria for deciding what purchases are permissible.

2. L/G Control: A Mix of Ground and Aerial Operations

- a. With a "proactive" (as opposed to a prevention) approach, be prepared for frequent requests for aircraft and calls on donors for reactive control.
- b. With a national crop protection service focus, even countries strong at l/g control will be at the mercy of neighboring countries' weaknesses.
- c. AELGA and USAID need to set up an emergency fund to be used for control-operations only, not to be used for training, research, awareness.
- d. Monies are released from this fund only after an approved, detailed plan of worked has been developed and approved by the Minister of Agriculture of the host country and the USAID Director.
- e. AELGA and FAO criteria for funding aerial support should encourage national aerial units first, regional organizations second and commercial applicators third.

3. Economic Threshold Research

- a. Review FAO economic threshold research proposal.
- b. Co-fund if it shows promise of being useful and accepted by skeptics as well as proponents.

4. Bio-Control Research

- a. Look at fit between bio-control research and Africa Bureau objectives and structure.
- b. Decide on whether USAID will provide five-year financing or find another donor

SHORT TERM: TRAINING

1. Training of and Collaboration with National Crop Protection Services

- a. Choose crop protection services for training in proactive control of l/gs according to whether they: 1) have a separate l/g control unit; 2) if l/g breeding areas are remote, they have agents stationed nearby. Other factors are: 3) institutional strength of the crop protection services so they can do l/g control on a sustained basis; or 4) they receive basic institutional strengthening from another donor.

MEDIUM TERM: ANALYSIS OF CONTROL OPERATIONS

1. Technical and Theoretical Feasibility

Answer how the "proactive" approach proposes to:

- a. Reduce the l/g population sufficiently so that those remaining revert to solitarious state.
- b. Reduce the l/g population sufficiently so that upon maturity no more than a few will reach suitable locations for successful breeding and survival of progeny.
- c. Reduce overall locust population in wide areas in excess of 90%? (or whatever number AELGA agrees upon).

2. Control Operations: Ground-Aerial Mix

- a. As a project output, and as part of its "proaction" strategy, AELGA: 1) should have clear criteria for when and when not to use planes; and 2) should follow and test the criteria.
- b. Data must be analyzed on aerial and ground performance during upsurges such as those in 1992-1994 and in Eritrea in 1995 to see what lessons can be learned. Some data of this type is presented in articles written by AELGA staff.
- c. The cost of aerial operations needs to be re-visited and compared to ground operations and to other aspects of the l/g control system AELGA is helping to build. Why are the recent FAO/IFAD estimates higher than others?

MEDIUM TERM: MONITORING AND EVALUATION

1. Achievement of Goal and Purpose

- a. Comparison of the 1995-1989 and 1992-1994 upsurges, or whatever other data make the case for "proaction."
- b. Analysis of whether "proaction": 1) averts plagues; and 2) "proaction" saves disaster assistance money as suggested in resource allocation documents.
- c. Submit the analysis to independent review of experts.

Achievement of Outputs — L/G Control Systems

2. Early Warning and Monitoring

Probing in terms of: coverage, rapidity of turn-around, accuracy, user-friendliness, utility, use by air and ground l/g control operations

- a. Pesticide Management
- b. Monitor for spraying errors with pesticides purchases with USAID funds.
- c. Correct the errors through training and technical assistance (with DLCO-EA for example)

3. The Mix of Ground and Aerial Operations

- a. Analyze, draw conclusions from ground-and aerial operations data and experience.
- b. Design and install a system to monitor and correct spraying errors by DLCO-EA in accordance with USAID L/G Management Guide.

MEDIUM TERM: ANALYSIS OF SUPPORT OPERATIONS

1. EMPRES

Technical feasibility, institutional feasibility and economic feasibility analyses needed.

2. Pesticide and Environmental Management

- a. An inventory of stored pesticides throughout region.
- b. Possible design of pesticide disposal activity.

3. Early Warning and Monitoring

- a. Explore the possibility of including in system: Desert Locust ecological surveys (Popov), historical wind and l/g trajectory information (Rainey and Cavin) DNA to trace swarm origin (Borden), checking locusts' wings and body parts for evidence of long flight and diet.

4. Bio-Control Research

- a. Explore building a permanent bio research capacity.
- b. Explore developing a bio-control business or industry with African scientists and business partners.

MEDIUM TERM: ANALYSIS OF ORGANIZATIONS

1. Analysis of National Crop Protection Services

The relation of AELGA's strategy of strengthening national crop development units and its relation to AELGA's objective of reducing the frequency and size of l/g plagues and the damage done by them, needs serious analysis and re-consideration. Specific hypotheses implied by the AELGA approach which must be tested and proved in general and on a case-by-case basis are:

- a. Extensionists, agents and farmers, can reach the necessary high kill rate on swarms over wide areas.
- b. Crop Protection Services personnel can leave their cropland posting for long, difficult periods of desert travel, and are, or can be, equipped to do so.
- c. Conversely, show that long difficult periods of desert travel are not necessary reaching proaction/prevention objectives.
- d. Crop Protection Service participation in l/g control of a proactive or preventive nature does not detract from the carrying out of other crop protection which are: 1) as or more important as l/g control to agriculture and farmers' economics and well being; 2) but less well funded, equipped and supported with training by donors.

2. Collaboration with Regional Organizations

Define EMPRES plans regarding:

- a. Support for regional organizations
- b. Creation of new regional mechanisms
- c. Headquarters, location, expense, how long
- d. Long-term commitment made on USAID's behalf

MEDIUM TERM: DEVELOPMENT AND USE OF DONOR COORDINATION TOOLS

1. Collaboration with FAO

- a. Analyze division of labor according to who is good at what and who is interested in what.

- b. Catalyze agreement on assignments and actions regionally and country-by- country

2. Country Level Coordination

- a. Design and install a system to put Country Coordinating Committees in practice.
- b. Make sure guidelines are met before USAID-funded pesticides are sent.

3. AELGA Activities through USAID Bilateral Missions

- a. Perhaps do an analysis of strategic objectives and AELGA fit with them.

MEDIUM TERM: TRAINING

Training of Aerial Support Groups: DLCO's spraying problems are AELGA's problem too. The PEA, the OTA report and USAID's Locust Management Operations Guidebook place the responsibility of assuring that USAID purchased pesticides are used properly squarely with USAID project management (AELGA). AELGA should systematically train DLCO and any aerial support groups, so that spraying errors are minimized. Most African nations cannot support the maintenance of an Aerial Control unit. The training of aerial applicators, aircraft engineers and mechanics, and, therefore, should be preceded by an institutional analysis.

LONG TERM LESSONS

1. Lessons for USAID Managers

- a. AELGA must be as rigorous and cautious in drawing cause-effect conclusions regarding the effects of "proaction" when communicating with USAID managers as when communicating with the scientific community.
- b. USAID should avoid making large budget allocations to projects based solely on data presented in internal evaluations, analyses and articles.
- c. The costliness of disaster assistance for plagues is not sufficient justification for investment in prevention or proaction. The proaction must show promise of preventing or reducing the seriousness of plagues for the investment to be worth it.
- d. Institutional factors and obstacles which must be systematically analyzed and solved by l/g proaction or prevention programs include: recurrent costs, technology transfer systems, dependence on dying or defunct regional organizations, hostility within and between nations, unwise government policies and inter-disciplinary collaboration.

2. EMPRES (Emergency Prevention System)

Questions that the evaluation team has about EMPRES are precisely the same as the questions it has about AELGA. That is, what is the technical, institutional and economic feasibility of the "proactive" approach to reducing the frequency and size of l/g plagues and the damage they do. Also, to what extent is AELGA making a long-term commitment with FAO on USAID's behalf?

3. A Pesticide Disposal Project

Basis: Through the 1990 OTA report, the U.S. Congress has requested that USAID assess pesticide disposal problems associated with l/g control efforts in Africa from legal, ethical, political, budgetary points. The report asks, "*How is USAID addressing insecticide storage and disposal problems resulting from previous locust/grasshopper control efforts?*" What monitoring is underway for longer term health and environmental effect?" Pesticide disposal falls well within a clause in the Project Paper Logical Framework Purpose which reads: "*To treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests.*"

- a. Pesticide disposal is an area where AELGA might attempt a large contribution, in terms of innovative ideas and generating collaboration if not investment.
- b. Serious consideration should be given to a funded action plan to dispose of all stored and obsolete pesticides. In most cases the Supplemental Action Plan is a good start. Pesticide disposal deserves a big budget and USAID should *consider* taking responsibility since many of the pesticides were bought with USAID and other donor money.

4. Bio-Control Research

- a. All contracts USAID has with bio-control research organizations should be analyzed to determine: 1) intellectual property rights; 2) responsibility of research groups to share profits with the countries, people and governments who collaborated on the research. (We are not suggesting that there are problems with the current contracts or contractors.)

5. Economic Threshold Research

- a. Effort should be made to avoid the pitfalls listed in Chapter V, Part C. 2, and to include models from economic analysis of disasters and natural resource economics. Factors from disaster economics which might prove useful are costs to a country or region of: 1) migration; 2) disruption of institutions and services; and 3) disruption of markets. From the donor point of view, costs of food aid and other relief and disruption of donor development programs must be factored in.

- b. The economic worth of l/g control should be combined with the probability of success of the control (be it prevention or proaction) to arrive at an investment criterion called "Expected Value." Ideally, to calculate "Expected Value" the answer to the "Is it worth it question" (economic feasibility) is multiplied by the answer to the "Is it technically possible" question and by the "Is it institutionally and managerially possible" question. An implication of the "Expected Value" approach is that no matter how valuable or worthwhile a project is, if it can not deliver on its objectives, it is not worth investing in.

E. Africa Bureau Policy Decisions Regarding AELGA

The current situation of AELGA and the conclusions of this formative evaluation, pose some policy questions with regard to AELGA for the USAID Africa Bureau.

1. Should AELGA be required to reduce l/g plagues, the damage they cause and disaster assistance expenditure?

In the Action Plan presented in this Chapter, the evaluation team challenges AELGA to provide convincing evidence that the "proaction" approach reduces plagues and suggests a time limit of six months or maybe a year. AELGA bears the burden of proof because they have used the plague aversion and disaster expenditure reduction arguments to obtain resources and a truly extraordinary dispensation with regard to USAID management mechanisms.

It may seem harsh to hold AELGA to the demanding plague reduction standard and ask the project to prove itself. Keep in mind, however: 1) the amount of money (\$30,000,000 spread over 10 project amendments); 2) the extraordinary dispensation which has consisted of no real Project Paper or feasibility analysis, a perfunctory Logical Framework and no updates of it, no truly external evaluations and no Work Plan approval process, etc. AELGA has the intellectual resources to do the job.

If the challenge of showing that AELGA's "proaction" approach reduces plagues, plague damage and disaster assistance expenditure, then USAID's decision is simple. Continue funding AELGA as long as there is money and the l/g plague reduction objective is of interest to USAID.

2. Should USAID fund AELGA if it fails the test of reducing l/g plagues, plague damage and disaster assistance expenditure, but proves itself against less demanding criteria (protects crops against l/g for example)

If the plague reduction challenge is not met, USAID's decision is more complicated. USAID must decide whether or not it wants to support a regional l/g control project with more modest, crop protection objectives. The evaluation team's advice would be "no," because: 1) there are better ways to support crop protection than with a Washington-based team of technicians; and 2) USAID has already funded large, lengthy and expensive crop protection programs and become disenchanted with them.

3. Should AELGA be allowed to evolve into a regional, general pest control and crop protection project, as it has begun to do with Amendment #6?

With Amendment #6 on December 9, 1992, AELGA's operational arena expanded to include armyworms, rodents and other pest problems. With this step, AELGA took on the aspects of prior USAID sponsored programs such as: 1) the Regional Insect Control Project; and 2) the Food Crop Protection Project with the U.S. Department of Agriculture (USDA), which also grew out of an original intent of l/g control.

The evaluation team's advice is to not continue along this line and to keep AELGA focused on reducing l/g plagues and the damage and disaster assistance expenditure they bring about, until the l/g problem is solved, or it is proven that AELGA can not do it.

4. Should AELGA stay where it is in the Africa Bureau, or shift to the Global Bureau because the l/g problem extends to the Near East and Asia?

The geography of the l/g problem, which extends over Central Africa, North Africa, the Near East and Asia, certainly argues in favor of a global placement for AELGA. There may be other factors in favor of leaving AELGA where it is, including the disruption caused by continually moving the project around, which outweigh the geography argument. The evaluation team has no more guidance to offer USAID with regard to AELGA's placement within the USAID organization.

5. Is AELGA obligated to follow the USAID Locust/Grasshopper Management Guidebook (1989)?

In their reaction to the draft evaluation, AELGA says:

. . . the evaluation report inappropriately refers to the USAID Locust Grasshopper Management Guidebook (1989), written solely for disaster response (the guidebook, in fact states that OFDA is the primary vehicle for responding to locust outbreaks, which is, of course no longer in effect), as if it is an official source for regulations and policy on USAID's approach to locust/grasshopper control (technically it is also regarded as being obsolete and in need of revision).

One way the Guidebook is obsolete is that it prohibits many prevention and proaction approaches. In general the guidebook predicates action on immediate threat to crops, rather than carrying out early, proactive or preventive action to head off the l/g threat or nip it in the bud.

6. What is USAID's interest in collaboration with FAO on l/g matters over the short, medium and long term?

The USAID/Africa Bureau needs to clarify its intentions with regard to collaboration with FAO on l/g control matters. Issues are: level and duration of financing available for l/g

activities. In particular, what will USAID's participation in EMPRES be over the short, medium and long term.

- 7. What is the division of labor among AELGA, OFDA, DRC, FAO and other donors in the event of a major l/g plague?**

Obligated USAID Funds for AELGA

Region/Country	Start Date	End Date	Grant/Project Number	USAID Funds Obligated	Total Funds obligated	Work performed	Category	Subtotal	Total
Mission Obligations									
CAPE VERDE			698-0517.55	\$ 1,835		Hugo Almeida	TRNG	\$ 1,835	
			698-0517.55	\$ 10,350		Motorcycle & Parts, Field Equipment	LCO	\$ 10,350	
			698-0517.55	\$ 73,562		95 Sprayers & Kits	LCO	\$ 73,562	
				<u>\$ 85,747</u>					\$ 85,747
MALI			688-0517.88	\$ 291,196		Aircraft Operation (Operation)	LCO	\$ 291,196	
			688-0517.88	\$ 63,825		Aircraft Fuel (Operation)	LCO	\$ 63,825	
			688-0517.88	\$ 94,446		Logistical Support (Operation)	LCO	\$ 94,446	
			688-0517.88	\$ 5,931		Pesticide Handling/Training (Operation)	LCO	\$ 5,931	
			688-0517.88	\$ 2,890		International Training	TRNG	\$ 2,890	
			688-0517.88	\$ 26,777		Contingencies: Perdiem, Car Rental, supplies, etc.	LCO	\$ 26,777	
			688-0517.88	\$ 18,111		Survey	LCO	\$ 18,111	
			688-0517.88	\$ 34,215		Direct Obligation; Admin./Technical Support	LCO	\$ 34,215	
			688-0517.88	\$ 37,221		TA	LCO	\$ 37,221	
			698-0517.88	\$ 146,027		Aircraft Operations	LCO	\$ 146,027	
			698-0517.88	\$ 458,519		TA	LCO	\$ 458,519	
			698-0517.88	\$ 378,107		Logistical Support (Operation)	LCO	\$ 378,107	
			698-0517.88	\$ 178,638		Aircraft Fuel (Operation)	LCO	\$ 178,638	
			698-0517.88	\$ 324,202		Pesticide Handling/Training (Operation)	LCO	\$ 324,202	
			698-0517.88	\$ 376,875		Locust Unit Operation	LCO	\$ 376,875	
			698-0517.88	\$ 36,390		NOLO Bait (Research)	RSRCH	\$ 36,390	
			698-0517.88	\$ 18,638		Crop Loss Assessment Colloquy	RSRCH	\$ 18,638	
			698-0517.88	\$ 97,101		Studies	RSRCH	\$ 97,101	
				<u>\$ 2,589,109</u>					\$ 2,589,109
MAURITANIA			625-0517.82	\$ 91,532		TA	LCO	\$ 91,532	
			625-0517.82	\$ 5,522		Training	TRNG	\$ 5,522	
			698-0517.82	\$ 224,784		TA	LCO	\$ 224,784	
			698-0517.82	\$ 42,627		Fuel for Survey Operation	LCO	\$ 42,627	
			698-0517.82	\$ 213,306		Emergency Assistance	LCO	\$ 213,306	
				<u>\$ 577,771</u>					\$ 577,771

Obligated USAID Funds for AELGA

<i>CENTRAL AFRICAN REP.</i>			1987: 625-0517	\$ 30,629	?	LCO	\$ 30,629	
			1987: 625-0517	\$ 7,657		TRNG	\$ 7,657	
			1989: 698-0517	\$ 921	?	LCO	\$ 921	
			1989: 698-0517	230		TRNG	230	
				<u>\$ 39,437</u>				\$ 39,437
<i>CHAD</i>			625-0917.77	\$ 40,372	TA, Survey	LCO	\$ 40,372	
			625-0917.77	\$ 10,093	Training	TRNG	\$ 10,093	
				<u>\$ 50,465</u>				\$ 50,465
<i>MADAGASCAR</i>			698-0517.87	\$ 385,993	Spraying (Locust Control)	LCO	\$ 385,993	
			698-0517.87	\$ 426,103	Pesticide Procurement (Operation)	LCO	\$ 426,103	
			698-0517.87	\$ 1,175,272	Biocontrol Studies (MSU)	ENV	\$ 1,175,272	
				<u>\$ 1,987,368</u>				\$ 1,987,368
<i>NIGER</i>			698-0517.83	\$ 509,000	TA & Locust Control	LCO	\$ 509,000	
			698-0517.83	\$ 1,442,000	Operation Support/ Locust Control	LCO	\$ 1,442,000	
			698-0517.83	\$ 115,000	Training	TRNG	\$ 115,000	
			698-0517.83	\$ 114,000	Direct obligations: Admin Support	LCO	\$ 114,000	
			698-0517.83	\$ 5,000	Contingency: Jet Fuel	LCO	\$ 5,000	
			698-0517.83	\$ 35,000	Evaluation of AELGA Project	EVAL	\$ 35,000	
			698-0517.83	\$ 20,000	TA: Survey Operation	LCO	\$ 20,000	
			698-0517.83	\$ 65,000	Project Mgt. Support	LCO	\$ 65,000	
			625-0517.83	\$ 98,949	TA	LCO	\$ 98,949	
			625-0517.83	\$ 765,631	Operations Support/ Locust Control	LCO	\$ 765,631	
			625-0517.83	\$ 4,000	Pesticide Training	TRNG	\$ 4,000	
			625-0517.83	\$ 345,433	Direct obligations: Admin Support & TA	LCO	\$ 345,433	
				<u>\$ 3,519,013</u>				\$ 3,519,013
<i>SENEGAL</i>			698-0517.85	\$ 590,798	Locust Emergency Control (Operations)	LCO	590,798	\$ 590,798
Total USAID Obligated Funds								
<u>USAID/Washington</u>								
<u>MSU (Biocontrol Research)</u>								

Obligated USAID Funds for AELGA

<i>MALI & CAPE VERDE</i>			AOT-0517-G-00-4119-00	\$ 332,049	\$ 455,957	see Mali Coop Agreement	ENV	\$ 332,049	
<i>MADAGASCAR</i>	Sep-95	Mar-97	AOT-0517-G-00-5136-00	\$ 397,922	\$ 555,721		ENV	\$ 397,922	
<i>ERITREA</i>	Jun-95	Jul-97	AOT-0517-G-00-5135-00	\$ 491,740	\$ 659,443	see Madagascar coop Agreement	ENV	\$ 491,740	
<i>CAPE VERDE</i>			AFR-0517-A-00-9064-00	\$ 581,224	\$ 581,224		ENV	\$ 581,224	
				\$ 1,802,935	\$ 2,252,345				\$ 1,802,935
Total MSU Obligated Funds									
<u>FAO</u>									
	Aug-95	Jul-96	698-0517-G-00-5013-00 (A1)	\$ 125,000	\$ 125,000	Emergency Locust Control, Economic/ Social Impact (EMPRES)	LCO	\$ 55,000	
							TRNG	\$ 5,000	
							LCO	\$ 65,000	
<i>MAURITANIA, ETHIOPIA, ERITRIA</i>	Aug-95	Jul-96	698-0517-G-00-5013-00	\$ 410,000	\$ 410,000	Emergency Locust Control, Economic/ Social Impact (EMPRES)	LCO	\$ 293,000	
						Social & Economic Cost/Benefit Analysis	ECON	\$ 75,000	
						Pesticide Triangulation	ENV	\$ 42,000	
	Aug-95	Jul-96	698-0517-G-00-5013-00 (A2)	\$ 250,000	\$ 250,000	Emergency Locust Control	LCO	\$ 175,000	
						Pesticide Triangulation	ENV	\$ 75,000	
<i>ERITRIA, ETHIOPIA, SAHEL</i>	Jun-95	Dec-95	698-0517-G-00-4024-00	\$ 224,000	\$ 224,000	Survey/Research	RSRCH	\$ 224,000	
<i>AFRICA REGION</i>	Aug-93	Dec-93	698-0517-G-00-3189-00 & 698- 0517-G-00-3090-00	\$ 150,000	\$ 150,000	Locust Forecasting	LCO	\$ 150,000	
<i>SAHEL & EAFR</i>	Oct-93	Jun-94	698-0517-G-00-3200-00	\$ 1,400,000	\$ 1,400,000	Emergency Locust Control	LCO	\$ 1,400,000	
<i>SUDAN</i>	May-93	Nov-93	698-0517-G-00-3201-00	\$ 760,000	\$ 760,000	Emergency Locust Control	LCO	\$ 760,000	
<i>ETHIOPIA, ERITRIA</i>	Jun-93	Dec-93	698-0517-G-00-3202-00	\$ 1,000,000	\$ 1,000,000	Emergency Locust Control	LCO	\$ 1,000,000	
<i>MALI</i>			698-0517-G-IN-8995-00	\$ 65,000	\$ 65,000	Emergency Locust Control TA	LCO	\$ 65,000	
<i>MAURITANIA</i>			698-0517-G-IN-8996-00	\$ 300,000	\$ 300,000	Aerial Operations	LCO	\$ 300,000	
<i>AFRICA REGION (10 countries)</i>			698-0517-G-IN-8997-00	\$ 2,100,000	\$ 2,100,000	Emergency Locust Control, TA, Training	LCO	\$ 1,470,000	
							TRNG	\$ 630,000	
<i>SAHEL</i>			698-0517-G-IN-9039-00	\$ 1,500,000	\$ 1,500,000	Survey of Distribution/ Displacement of Locusts	LCO	\$ 750,000	
							TRNG	\$ 750,000	
				\$ 8,284,000	\$ 8,284,000				\$ 8,284,000
Total FAO Obligated Funds									
<u>AMERICAN CYANAMID Co.</u>									
<i>SENEGAL</i>	Nov-88	Mar-89	AFR-0517-C-00-2097-00	\$ 970,573		Malathion Pesticide Purchase	LCO	\$ 970,573	

Obligated USAID Funds for AELGA

									\$ 970,573
Total AMERICAN CYANAMID Obligated Funds									
<u>DYNAMAC Corporation</u>									
SUDAN & MALI	May-87	Dec-88	AFR-0517-C-00-7035-00	\$ 1,992,912		Pesticide Testing (Basis for Programmatic Environmental Assessment	RSRCH	\$ 1,992,912	
									\$ 1,992,912
Total DYNAMAC Obligated Funds									
<u>PANOS Institute</u>									
SAHEL & ERITREA, ETHIOPIA, SUDAN	May-91	Apr-92	AFR-0517-A-00-1115-00	\$ 93,700		Emergency Locust Assistance Project	LCO	\$ 93,700	
									\$ 93,700
Total PANOS Obligated Funds									
<u>Dames & Moore Corporation</u>									
SAHEL & SUDAN	Jun-90	Dec-92	PDC-5517-I-15-7136-00	\$ 54,370		Review of Environmental Concerns for AID Program Locust/Grasshopper Control	ENV	\$ 54,370	
									\$ 54,370
Total D&M Obligated Funds									
<u>US Geological Survey</u>									
AFRICA REGIONAL	Feb-88	Mar-89	AFR-0510-P-GS-7022-00; PIO/T: 698-0517-2-8612024	\$ 200,000		TA: Sattelite Green-ness Mapping	LCO	\$ 200,000	
W. SAHEL	Apr-87	Sep-90	AFR-0510-P-GS-7022-01	\$ 299,930		Emergency Locust Assistance	LCO	\$ 299,930	
				\$ 499,930					
Total USGS Obligated Funds									
Oregon State University Obligated Funds									
MALI & SAHEL	Apr-91	Jun-92	AFR-0517-A-00-1028-00	\$ 101,501		Economic Models for Pest Control	ECON	\$ 101,501	
Total OSU Obligated Funds									
<u>Consortium for International Crop Protection (CICP)</u>									

Obligated USAID Funds for AELGA

<i>OSU W/ SOME FIELD WORK IN CHAD</i>	Jun-89	Sep-90	DAN-4142-C-00-5122-00	\$ 773,989		Economic Analysis/ Crop Assessment	ECON	\$ 712,972	
						Research on Neem tree	RSRCH	\$ 61,017	
Total CICP Obligated Funds									\$ 773,989
<u>Tippets, Abbott, McCarthy & Stratton Obligated Funds</u>									
<i>AFRICA, ARABIA, S.ASIA</i>	Aug-87	Apr-88	PDC-0000-I-10-4103-00	\$ 348,176		Programatic Environmental Assessment	ENV	\$ 348,176	
<i>AFRICA, ARABIA, S.ASIA</i>	Feb-87	Mar-89	AFR-0517-0-00-9017-00	\$ 24,635		Programatic Environmental Assessment	ENV	\$ 24,635	
				<u>\$ 372,811</u>					
Total TAMS Obligated Funds									\$ 372,811
<u>International Institute of Tropical Agriculture Obligated Funds</u>									
Contact Walter Knausenberger for Regional Info and to verify total funding. Figure shown represents USAID funding, however additional funding sources were present.	Oct-89	Sep-91	AFR-0517-G-IN-9096-00	\$ 972,840		Procurement, Use & Testing of Biopesticides (Multi donor: Canada (CIDA), U.K. (ODA), Netherlands (DGIS)) Total of \$3.5 million	LCO	\$ 972,840	
Total IITA Obligated Funds									\$ 972,840
<u>RSSA</u>									
<i>SUB-SAHARAN AFR.</i>	Feb-93	Feb-94	AOT-0478-R-AG-2166-00	\$ 249,580		TA (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 249,580	
<i>AFRICA REGIONAL</i>	FY94		AOT-0478-R-AG-2166-00; PIO/T: 698-0517-4618001	\$ 581,060		TA (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 581,060	
<i>AFRICA REGIONAL</i>	May-93	Sep-95	698-0517-3-3614183	\$ 9,189		TA Office Space(20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 9,189	
<i>AFRICA REGIONAL</i>	FY95		AOT-0478-R-AG-2166-00; PIO/T: 698-0517-5615901	\$ 900,000		TA (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 900,000	
<i>AFRICA REGIONAL</i>	Apr-94	Dec-94	698-0517-8013	\$ 8,196		TA Office Space (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 8,196	

Obligated USAID Funds for AELGA

AFRICA REGIONAL	FY95		AOT-0478-R-AG-2166-00; PIO/T: 698-0517-5615901	\$ 9,904		TA Logistical & Admin Support (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 9,904	
AFRICA REGIONAL	FY89/91		BAF-0135-R-AG-2200-38; PIO/T: 698-0517-2-9611303	\$ 300,000		TA (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 300,000	
AFRICA REGIONAL	FY90/91		BAF-0135-R-AG-2200-47; PIO/T: 698-0517-2-0611660	\$ 368,735		TA (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 368,735	
AFRICA REGIONAL	FY91		BAF-0135-R-AG-2200-50; PIO/T: 698-0517-2-1612703	\$ 24,000		TA Office Support (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 24,000	
AFRICA REGIONAL	FY91		BAF-0135-R-AG-2200-51; PIO/T: 698-0517-2-1612705	\$ 477,375		TA (20% LCO, 30% TRNG, 20% ECON, 10% INFO, 5% EVAL, 15% ENV)		\$ 477,375	
						Category Breakdown		\$ 2,928,039	
						20% LCO	LCO	\$ 585,608	
						30% TRNG	TRNG	\$ 878,412	
						20% ECON	ECON	\$ 585,608	
						10% INFO	INFO	\$ 292,804	
						5% EVAL	EVAL	\$ 146,402	
						15% ENV	ENV	\$ 439,206	
									\$ 2,928,039
AFRICA REGIONAL	FY89		BAF-0135-R-AG-2200-33; PIO/T: 698-0517-2-9611303	\$ 420,000		TA & Training 85% LCO, 15% TRNG		\$ 420,000	
AFRICA REGIONAL	FY87		BAF-0135-R-AG-2200-23; PIO/T: 698-0517-3-7611060	\$ 151,894		TA & Training 85% LCO, 15% TRNG		\$ 151,894	
						Category Breakdown		\$ 571,894	
						85% LCO	LCO	\$ 486,110	
						15% TRNG	TRNG	\$ 85,784	
									\$ 571,894
MALI	FY88		BAF-0135-R-AG-2200-27; PIO/T: 698-0517-2-8612083	\$ 155,947		Locust Control (50% LCO)/ Biocontrol Testing (50% ENV)		\$ 155,947	
						Category Breakdown		\$ 155,947	
						50% LCO	LCO	\$ 77,974	
						50% ENV	ENV	\$ 77,974	
									\$ 155,947
AFRICA REGIONAL	FY88		BAF-0135-R-AG-2200-30; PIO/T: 698-0517-2-8612109	\$ 550,000		TA (80% LCO, 20% TRNG)		\$ 550,000	
						Category Breakdown		\$ 550,000	
						80% LCO	LCO	\$ 440,000	

Obligated USAID Funds for AELGA

						20% TRNG	TRNG	\$ 110,000	
									\$ 550,000
AFRICA REGIONAL	FY89/91		BAF-0135-R-AG-2200-37; PIO/T: 698-0517-2-9611303	\$ 180,000		TA & Training 50% LCO, 50% TRNG		\$ 180,000	
						Category Breakdown		\$ 180,000	
						50% TRNG	TRNG	\$ 90,000	
						50% LCO	LCO	\$ 90,000	
									\$ 180,000
AFRICA REGIONAL	FY89/91		BAF-0135-R-AG-2200-39; PIO/T: 698-0517-2-9611303	\$ 13,625		Pesticide Conference	INFO	\$ 13,625	
SAHEL	FY88		BAF-0135-R-AG-2200-26; PIO/T: 698-0517-2-8612057	\$ 942,000		TA & Training 85% LCO, 15% TRNG	LCO	\$ 942,000	
									\$ 955,625
									\$ 955,625
Total RSSA Obligated Funds									\$ 5,341,505
<u>Participating Agency Service Agreement</u>									
AFRICA REGIONAL	FY89		AFR-0517-P-AG-9042-00; PIO/T: 698-0517-2-9611305	\$ 615,000		Rodent Control	RSRCH	\$ 615,000	
CHAD	FY89		AFR-0517-P-AG-9042-00; PIO/T: 698-0517-2-9611305	\$ 262,000		Rodent Control	RSRCH	\$ 262,000	
CHAD	Aug-89	Mar-91	698-0517-3-90021	\$ 42,500		Rodent Control Research	RSRCH	\$ 42,500	
NIGER	FY92		698-0517	\$ 139,316		Conference on Pesticide Safety	TRN	\$ 139,316	
				<u>\$ 1,058,816</u>					
									\$ 1,058,816
<u>REDSO/W</u>									
AFRICA REGIONAL	FY88		698-0517-G-SS-8025-00	\$ 100,000		Symposium on Remote Sensing of Environment	INFO	\$ 100,000	
									\$ 100,000
<u>AMEX</u>									
AFRICA REGIONAL	Apr-87	Apr-97	698-0517-3-5615916	\$ 29,682		TA Admin Support	LCO	\$ 29,682	
AFRICA REGIONAL	Jul-87	Sep-95	698-0463-3-4614257	\$ 25,896		TA Admin Support	LCO	\$ 25,896	
				<u>\$ 55,578</u>					
									\$ 55,578
<u>Octagon</u>	Apr-87	Dec-94	698-0517-4-4618011	\$ 5,612		Admin Support: Computer Systems Mgr.	LCO	\$ 5,612	
<u>GSA</u>	Aug-93	Jul-94	698-0517-3-3614185	\$ 11,283		Office Space	LCO	\$ 11,283	
				<u>\$ 16,895</u>					
									\$ 16,895
									\$ 31,932,063

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ATTACHMENT B

PIO/T NO. 698-0517-3-561510

SCOPE OF WORK

LAST FORMATIVE EVALUATION

**AFRICA EMERGENCY LOCUST/GRASSHOPPER ASSISTANCE
(AELGA)**

PROJECT (625-0517 and 698-0517)

1. BACKGROUND AND HISTORY

1.1. The Africa Emergency Locust/Grasshopper Assistance (AELGA) Project will be evaluated. Technical performance on the project was achieved through Resources Support Service Agreements between the U. S. Agency for International Development (USAID) and Office of International Cooperation and Development (OICD).

1.2. Project Objective:

1.2.1. The objective of the AELGA Project is to provide assistance to manage l/g populations. By doing so, the project's goal is to:

Contribute to the improved nutritional status and well being of Africans by reducing the threat of locust and grasshopper plague-induced famine, and its associated economic and social suffering.

1.2.2. The project's purposes have evolved from the Project Paper approved in February of 1987 through Project Amendment No. 10. However, the most succinct and consistent statement of project purposes is found beginning in Amendment Number 3 of July 1988:

- a. To treat recovery and rehabilitation aspects of problems caused by the current locust and grasshopper pest problem threatening many African countries and to help bring it under control;
- b. Establish improved management and control mechanisms that will keep this problem under control in the future; and
- c. Support early warning of famine threats posed by locust and other episodic problems.

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

1.2.3. Amendment 10 to the authorization states that the project is to provide support for the long-term activities involved in the prevention and mitigation of locust/grasshopper damage. Clearly there has been a shift of themes related to project purpose and therefore the evaluation will attempt to describe and assess these long term activities.

1.3. Project Funding:

1.3.1. AELGA was authorized April 3, 1987 with a LOP funding of \$15 million. Since then, ten amendments to the authorization have been approved, increasing the LOP funding to \$46,035,000 and extending the PACD to April 2, 1997. AELGA's current obligation is about \$34 million.

1.3.2. In the table below, the "Africa Regional Obligations" are managed by USAID/W and are comprised of RSSA agreements, FAO grants, and other grants and cooperative agreements. The FAO grants have directly supported field activities and can be attributed to the overall level of AELGA activities in various African countries.

1.3.3. On the other hand, "AELGA Obligations to the Field" represent AELGA funds that were allowed out to the field for **their** management in cooperation with the host country. These activities will be evaluated. Even though Niger and Mali have separate bilateral crop protection support projects incorporating locust and grasshopper activities, those activities will not be evaluated and their funding is not listed below.

1.3.4. The "Non-emergency Pest" category represents the use of AELGA funds by the Africa Bureau to develop and implement the Famine Early Warning System project and a telecommunication response to the Southern Africa Drought of 1992. These activities will not be evaluated.

Allocation of AELGA Resources

Africa Regional Obligations	<u>\$17,719,300</u>
AELGA/W	
AELGA Obligations to the Field	<u>\$10,285,000</u>
USAID/Niger	3,400,000
USAID /Madagascar	2,500,000
USAID/Mali	2,014,000
USAID/Senegal	1,564,000

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

USAID/Mauritania	578,000
Minor Country Programs	130,000
Non-Emergency Pest Activities	<u>\$5,582,700</u>
FEWS	5,272,836
Other Activities	309,864
Total Estimated Obligations	<u>\$33,578,000</u>

1.4. Prior Evaluations:

There have been evaluations and assessments of the AELGA activities sponsored by AID/W or the field missions. Gambia and Mauritania hosted evaluations of control efforts; a mid-term evaluation in 1989 partially focused on control efforts; and there were other evaluations of greenness mapping for locust forecasting in Niger and Chad. In 1993 an assessment summarized the activities of AELGA and provided guidance for future project direction. It serves as a useful reference of the variety of activities carried out now under the project. USAID/Niger sponsored an evaluation of AELGA activities in 1994. There was also an evaluation of biocontrol project activities completed in 1994.

2. PURPOSE OF EVALUATION

As this evaluation will be executed 18 months prior to the Project Activity Completion Date (PACD), April 2, 1997, it will refine project direction through the PACD. It will also provide a rational and direction for designing a new project for activities for sustainable control of locust/grasshopper (l/g) and other emergency pests. Secondly, the evaluation will qualitatively determine past successes of the project in accordance with the project's purposes and its success in following the recommendations of past evaluations and assessments.

3. EVALUATION METHODOLOGY**3.1. Key Evaluation Questions**

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

To guide the evaluation, evaluators are encouraged to use the following questions as a broad framework for addressing and reporting on the specific AELGA evaluation issues at the specified project purpose and goal levels as presented in Section 4.

- a. What was done in AELGA? The evaluation should provide an overall review of project activity in these main areas: locust/grasshopper (l/g) and other emergency pest control efforts (contrasting the already evaluated control efforts of the late 1980s with those of 1992-1994), biocontrol research, training, technical assistance, and AELGA's leadership effect with U.S. agencies, other donors' activities, and the FAO.
- b. Did AELGA establish improved management and sound emergency control mechanisms to keep the l/g under control?
- c. Were AELGA activities properly managed and implemented? The evaluation should determine if project activities were fully implemented as initially prescribed or subsequently modified by recommendations from evaluations and assessments.
- d. Did the activities produce their intended impacts at the purpose/goal levels of the project?
- e. Did the AELGA project follow the recommendations of the past evaluations and assessments and the Congressional report from the Office of Technology Assessment?
- f. With over 50 percent of the AELGA Regional funds going into FAO grants, has the FAO been an effective organization for prevention, mitigation, and control of l/g and for institutional strengthening at the regional and national level? Were the FAO grants an effective way to further AELGA's project purposes and goal? Is this mechanism recommended for future activities? Do other feasible options exist?
- g. Will the activities and their impacts last after AELGA? The evaluation should be alert for trends or indications of sustainability. What factors within the various countries will enable or inhibit project sustainability?
- h. What follow-on activities should be undertaken by AFR/DRC and USAID missions and host countries where locust/grasshopper (l/g) and other emergency pests are found.

- i. Were recent AELGA activities soundly based in development theory and practices?

3.2. Evaluation Design/Methodology

3.2.1. The recommended evaluation unit of analysis is the host country where AELGA has provided financial and technical support, see Section II.

3.2.2. The implementation work plan for the evaluation should include the following steps:

- a. Summarize a core set of program activities by country that were exposed to AELGA Regional, AELGA mission, and FAO (AELGA funded) activities, e.g., technical assistance, training, control, research, and institutional support.
- b. Aggregate the grand total of AELGA resources by using the core set of activities. For example total funding for technical assistance, research, etc.
- c. Collect evaluation data from interviews and written documents, prior evaluations, publications funded under AELGA to assess:
 - (1) The quality and usefulness of AELGA documents in light of project goal and purpose;
 - (2) The modality of RSSA agreements as a mechanism for project implementation and management;
 - (3) The responsiveness of USDA/OICD in supplying technical assistance and the quality of the performance of the technical experts in implementing the project;

- (4) The programmatic management of the project by the technical assistance team; and
 - (5) The USDH AID/W management of the project in terms of project direction, management, monitoring, and AID regulations and guidelines.
- d. Collect evaluation data on the issues found in Section 4, in Mali, Madagascar, and Eritrea from the beneficiaries, ministries of agriculture, USAID missions, regional and international institutions and other donors.

4. AELGA EVALUATION ISSUES

4.1. This section lists 5 key evaluation issues at the Purpose-Level Impact and the Goal-Level Impact levels to be assessed by the evaluation team.

4.2. Analysis and reporting of evaluation findings, conclusions and recommendations, and lessons learned will be presented for each of these issues. Wherever possible, the report will attempt to compare pre-AELGA status to current status and adjust impact to reflect other donor activity for which AELGA is not responsible.

4.3. Purpose-Level Impact

4.3.1. To treat recovery and rehabilitation aspects of problems caused by the current locust and grasshopper pest problem threatening many African countries and to help bring it under control.

- Contrast the control of the 1986 - 1988 locust and grasshopper plague as reported in AELGA documentation with the control effort of the 1992 - 1994 outbreak.
- Data sources are the project paper, the ten amendments to its authorization, the 1989 mid-term evaluation, the Office of Technology Assessment's "Special Report A Plague of Locusts, core AELGA and mission documents, and published literature.

4.3.2. Establish improved management and control mechanisms that will keep the l/g problem under control in the future.

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

Institutional development/strengthening at the national (host country), regional (OCLALAV, DLCO/EA), and international level (FAO).

- Implementation mechanisms established for emergency control operations
- Locust and grasshopper infestations mitigated as a result of increased capacity to deal with this problem
- Institutions continually monitoring and controlling grasshoppers and locusts in times of non-emergency

4.3.3. Support early warning of famine threats posed by locust and other episodic problems.

Institutional development at the national, regional, and international level that has the capacity to forecast locust and grasshopper outbreaks.

- Surveillance and survey operations on-going
- Linkages between forecasting, ground verification, and initiation of control efforts
- Forecasting through use of greenness mapping, rainfall, and other data for early warning
- Host countries use external and internal information on outbreaks for decision making for their l/g control activities
- Regional institutions and international entities disseminate information to host countries for l/g control activities
- Early warning is supported by host country, regional, and international human and financial resources to identify and direct control intervention

4.3.4. Long-term activities for prevention and mitigation of locust/grasshopper damage.

4.3.4.1. Training

Institutionalization of training capacity reflected in host country support for their own training programs

- Transfer of curriculum content into host countries training program
- Level and quality of host country training offered
- Budget of host country allocated for training activities

4.3.4.2. The impact of in-country or third country training on
1) technically skilled staff at all levels (managerial, field, and farmer brigades) 2) prevention and mitigation strategies or plans prepared and implemented

- Number and retention of technically-trained staff in Crop Protection Units
- Quality and thoroughness of prevention and mitigation plans
- Development and follow through on the implementation of training plans

4.3.4.3. Integrated pest management (IPM) tactics, human health and safety, economic and social impact of l/g control are important host country key factors in preparedness and mitigation planning at national, regional, and international levels

4.3.4.4. Host country acceptance of biological control as a promising method for sustainable l/g pest management

4.4. Summary Project Impact (Goal-level Impacts)

Reduction of the threat of l/g plague induced famine, and its associated economic and social suffering.

4.4.1. What qualitative indicators are available to access goal-level impacts?

4.4.2. Sustainable innovations introduced directly by AELGA's technical assistance, training and research interventions

4.4.3. Lessons learned for application to further l/g long term, sustainable control and short-term emergency control

4.4.4. FAO, donors, and regional institutions dealing effectively with each other to foster long-term sustainable host country mechanisms for l/g control

4.4.5. Studies, models, and analyses developed and promoted by

AELGA offer host countries, FAO, and other donors effective tools for l/g control

5. TEAM COMPOSITION AND REQUIREMENTS

The evaluation team will consist of three persons with the following lists of key skills that are required for this evaluation. Some team members will have to cover more than one area of expertise. In addition to the three-person team a facilitator will lead a team planning meeting with the AELGA project staff and the evaluation team.

5.1. AELGA Evaluation Team Skills

5.1.1. Team Leadership: proven experience leading large teams in design or evaluation of complex, multi-year projects; excellent interpersonal and team facilitation skills; proven success at timely report preparation and delivery; familiarity with AID procedures and reporting requirements. Team facilitation skills are also required.

5.1.2. Evaluation Research: experience with evaluation design and implementation; familiarity with qualitative and quantitative data collection methods and their application; experience with use of qualitative data collection methods such as key informant interviewing, focus groups, and documentary analysis.

5.1.3. Entomology: proven professional field experience in Africa in pest management; familiarity with preparedness, mitigation, and emergency control of insect pests preferably locust or grasshoppers.

5.1.4. Human Resource Development: experience in agricultural training and extension activities as they relate to developing countries;

5.1.5. Institutional Development: familiarity with organizational development methodology as it pertains to the AELGA project.

5.2. Team Requirements:

The following conditions will apply to the evaluation team exclusive of the team facilitator:

- none may have prior long or short-term association with the AELGA project, i.e., funded by AELGA project;

- At least two must have a minimum of five years and the third must have significant work experience in Africa in the skill areas they represent;
- Two must speak French at the FSI 3/3 level;
- all must have proven English speaking and writing ability;
- all must have computer literacy; and
- all must be able to withstand a rigorous travel schedule to Africa with minimal local support; and
- The team leader MUST be a permanent employee of the IQC firm.

6. TIMING AND DURATION

6.1. Phase I

6.1.1. Phase I will be a total of 77 person days of effort and will begin September 11, 1995 and terminate October 10, 1995. A six day work week will be authorized. Each member of the evaluation team is budgeted for 25 work days and the team facilitator is budgeted for two days.

6.1.2. The team planning meeting will be held September 11, 1995. In order to prepare for this essential meeting, the team facilitator need to begin his/her activity the week prior to the week of September 11. The first week of the evaluation will be in Washington D.C. of which the first day will be used for a team planning meeting with the AELGA Project Officer and staff. This meeting will be used to establish working norms, develop schedules, define team member roles and responsibilities, and otherwise prepare for information collection, analysis, and reporting tasks. Up to four and a half additional days may be used by the team in Washington, D.C. to become familiar with the project documents, to interview the project staff, and prior project officers, to develop a work plan, and to prepare a preliminary report outline.

6.1.3. The evaluation team will travel to Rome, Italy, Madagascar, Eritrea, and Mali beginning the first work-week after submission by the team of its work plan, and subsequent approval of the plan by the Project Officer. The remaining work days less two work days at the end of Phase I will be for field collection

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

of evaluation data. It is estimated that five work days per country for a total of 15 person days will be required. This includes travel time. Two work days are programmed for Rome for consultation with the FAO. The work plan will contain the travel schedule.

6.1.4. The last two work days of Phase I will be in AID/W and will be for presentation of the draft report, final gathering of information and debriefing with the USAID/W and AELGA staff.

6.2. Phase II

AFR/AA/DRC will provide written comments on the draft evaluation to the contractor within 30 days from the date of the teams briefing, that would be o/a November 10, 1995. Upon receipt of the written comments, Phase II will begin. Phase II of the evaluation will include only the Team Leader and it will be for a period of not more than five days. The culmination of this Phase II will be the submission of the final evaluation report and the draft PES as described below. The timing of this submission is o/a November 17, 1995.

7. REPORTS AND BRIEFINGS

7.1 Work plan

The evaluation team will submit a work plan to the Project Officer. It will require the Project Officer's approval before the team travels to the field.

7.2. Draft Report and Briefing

The team will submit a draft report to the Project Officer the first work day after the team returns from travel. In addition they will conduct a briefing to present preliminary findings and recommendations of the evaluation in AID/W. USAID will provide written comments on this draft directly to the IQC firm.

7.3. Final evaluation Report

After the formal debriefing to the AFR Bureau Phase I of the evaluation will end. Phase II will be for a period of not more than five days and will begin when the PO delivers USAID/W written comments on the draft evaluation report to the team leader. The team leader will be responsible for incorporating AFR/AA/DRC's comments into the final report. The team leader will submit the final evaluation report to the P.O. The format of the final report will be as follows:

Executive Summary of findings, conclusions, and recommendations, not to exceed three pages.

Project Identification Data Sheet

Table of Contents

Introduction and Background (including program description and methodological summary), not to exceed three pages.

Body of Report, organized as follows for each assessment issue, not to exceed 35 pages.

- Major Findings (Evidence) for each evaluation issue
- Conclusions and Recommendations for future activities
- Lessons Learned of broader application to AFR/DRC, and the broader development community

Annexes

- Scope of Work
- Project Log Frame
- Documents consulted
- Persons contacted (and affiliation)
- Methodology (including a discussion of the limitations of the methodology employed)
- Other supporting materials or analyses

7.4. Project Evaluation Summary (PES)

Along with the Final Evaluation Report, the Contractor will submit a draft of the PES as per AID Handbook 3, Chapter 12, App 12A i, 1 and 2.

8. SUBMISSION OF REPORTS

8.1. Draft Report.

On October 9, 1995 the contractor will submit ten copies of the draft evaluation report to the AELGA Project Officer. In addition the report will be submitted on diskette as a WordPerfect 5.1 or 5.2 document.

8.2 Final Report

Provided that the Contractor received AFR/AA/DRC's written comments on or before November 10, 1995 the following will be submitted to the Project Officer on November 17, 1995: 1) twenty copies of the final report in English 2) twenty copies of the report translated into French, and 3) five copies of the draft PES plus a diskette of the PES in WordPerfect 5.1 or 5.2.

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

ANNEX E: RSSA COMMENTS

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

AFR/AA/DRC

Room 3909 NS

A.I.D.

Washington, D.C. 20523-0079

April 10, 1996

Dr. George E. Cavin
3530 River Oaks Drive
New Braunfels, Texas 78132

Through:

Roberta Warren
Senior Associate
Management Systems International
600 Water Street, S.W.
Washington, D.C. 20024

Subject: Revised Comments on the Second Draft Report of the Evaluation of the Africa
Emergency Locust/Grasshopper Assistance (AELGA) Project 698-0517)

Dear George:

I would like to thank you for your comments contained in your letter. Since I was absent, David Adams forwarded your letter to Dr. Allan Showler for his action. Attached to this letter are the revisions that Allan has made. I did not include the appendices in the attachment since they were not modified.

Please review the revised comments and advise Roberta Warren if they are acceptable so the report can be finalized as soon as possible. However, if the revisions are not acceptable to you, Allan has requested that you contact him directly and discuss your concerns.

Again I would like to express my appreciation for your effort as an evaluation team member. Regardless of the technical differences between the report and the RSSA staff, the evaluation report presents issues that deserve serious discussion by the Africa Bureau.

Sincerely,

John T. Rifenbark
Project Officer

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

AELGA

cc Dr Allan Showler
Jean Horton, M/OP/AOT

MEMORANDUM:

TO: David Adams, AFR/AA/DRC

FROM: Allan Showler, Yeneneh Belaynen, Alan Schroeder, and Alise Laroche,
AFR/AA/DRC/AELGA

SUBJECT: Review of the 2nd Draft of the AELGA Evaluation Report

The second draft of the Formative AELGA Evaluation report differs little from the first draft, despite copious and careful suggestions and reactions to it from many quarters. The primary changes were some improvement in the format, and some retreats from indefensible positions. The attached represent the collective AELGA staff review of the second draft of the evaluation report. Many of the ideas expressed herein are repetitions from the AELGA review of the first draft, and parts of that first response are appended to this review.

AELGA staff strongly suggests that the evaluation committee view the first draft of the MSI report to gain a relevant perspective on the evaluation's template which shows a general lack of understanding about locust issues to the point where even fundamental facts were either ignored or misrepresented. Likewise, AELGA recommends that the evaluation committee examine (in case it has not done so) the review comments that AELGA provided to gain perspective on the pervasiveness and magnitude of the first draft's inadequacies. In order for the team to have produced an accurate and constructive evaluation, and, for that matter, to adhere to their own scope of work, a significant level of alchemy would have to occur. This, in and of itself, represents a serious ethical and technical dilemma.

AELGA is very concerned with a number of issues relative to this report, including the way in which the evaluation was conducted and written, an obvious adherence to preconceived notions that contradict existing documentation and the statements of those persons that were interviewed, lack of understanding of basic USAID procedures and project documentation, very fundamental technical errors and fabrications, inconsistencies in argument and logic, lack of substantiation for notably controversial opinions, bias in favor of one regional locust control organization, and a disregard for the reviews of the first draft (provided by USAID/Mali, USAID/Eritrea, the Eritrean Ministry of Agriculture, the Food and Agriculture Organization of the United Nations, OFDA, AFR/PSGE, and Global Bureau to name a few), and devolving an evaluation exercise into a free-wheeling debate by selectively inserting quotes from AELGA's first set of comments for the purpose of bolstering staunch positions carried over from the first draft.

Finally, the AELGA staff has had to limit its comments in this review simply out of time constraints (though this review is more than 20 pages long!), and because it appears that the evaluation team has largely ignored previous diligent attempts to rectify errors and the morass

of other problems in the first draft. Rest assured that this draft could easily have been twice its present size with more than twice the information that the team must consider, recognize, and incorporate appropriately.

The AELGA staff recommends two possible options regarding treatment of this report:

- 1) Because of the overwhelming irreconcilable problems associated with the process of the evaluation, technical inadequacies, apparent bias, lack of substantiation, inconsistencies, and disregard for corrections made available during the first draft's revision, the best option is to reject the report in its entirety. A particularly serious consideration is that the evaluation, in many ways, failed to adhere to the scope of work. The continuation of AELGA activities beyond the April 1997 PACD will be examined in a concept paper precedent to a redesign of the project.
- 2) Because of the problems with the report as stated above, only those recommendations that appear to be reasonable and constructive in light of AFR Bureau objectives should be considered for acceptance, albeit with appropriate modifications.

ATTACHMENT B

PIO/T NO. 698-0517-3-561510

FINAL DRAFT

AELGA PROJECT REVIEW OF THE SECOND DRAFT OF THE FORMATIVE
EVALUATION OF THE AFRICA EMERGENCY LOCUST/GRASSHOPPER
ASSISTANCE (AELGA) PROJECT

by

Allan Showler, Senior AELGA Technical Advisor
Yeneneh Belayneh, Asst. AELGA Technical Advisor
Alan Schroeder, Asst. AELGA Technical Advisor
Alise Laroche, AELGA Project Coordinator

April 1996

INTRODUCTION

This review deals with general areas of weakness in MSI's second draft of the evaluation report. In some instances, this review calls for the reader to refer to an appendix which consists largely of points made in AELGA's review of the first draft of the evaluation report because the second draft failed to address these points during the revision process.

Like the first draft of the report, which should be examined by the USAID committee formed to deal with this controversial evaluation, this second draft suffers from the same procedural problems (how the evaluation was conducted), technical errors, and serious misunderstandings of USAID procedures and documents that all bear directly upon the conclusions and recommendations. The reasoning for resistance to early intervention against locust outbreaks, has, in the second draft, taken on a strong flavor of intransigence.

THE EVALUATION PROCESS

Inappropriate Interview Process

The interview process during the evaluation was problematic at best. *Approximately 65% of the contacts that were associated with AELGA activities in one way or another and should have been interviewed were not interviewed.* While the evaluation report's list of persons contacted indicates that a certain number of these contacts were interviewed, many of those persons who were interviewed have indicated to AELGA that the interview process with regard to them was not adequate. The AELGA staff itself was not properly interviewed. Further, the evaluation team failed to keep some of its appointments; the Minister of Agriculture of Eritrea and UNDP in Eritrea both complained to USAID/Eritrea that the team failed to abide by its own appointments with them. Please refer to **Appendix A** for more detail on this issue.

Report's Findings-Conclusions-Recommendations Model

While the Findings-Conclusions-Recommendations model being adopted as the report's format is normal, the problem with this particular report is that its findings are not supported with facts or are erroneous, misconstrued, or misrepresented. This leads to flawed conclusions and, in many cases, inappropriate recommendations. But, oddly, in this report, the recommendations often do not correlate with the findings or the conclusions.

Missing Evaluation Team Member

A third member of the evaluation team mandated with the tasks of institutional and training analyses, did not accompany the other team members on their TDY to Africa and Rome, and, further, his name does not appear on the second draft of the evaluation report. Are we to assume that this was a two-person evaluation even when the scope of work expressly detailed three members? The second draft of the evaluation report states that this person's name was left off the report because his contributions were very limited. Nevertheless, the report deals with

institutional and training issues despite the absence of the third member of the team both in terms of conducting the evaluation and in terms of writing the report. *This is highly inappropriate and it throws a very questionable light on the already controversial content of the report.*

The Scope of Work for the Evaluation was Not Followed

The scope of work for the evaluation was not adhered to in many ways. This is a very serious matter and must be addressed fully before this report should receive further consideration.

- The SOW called for a 3-person team to travel to Rome and Africa. Only two members went.
- The SOW called for a training and institution building specialist to travel to Africa. The institution and training specialist did not travel.
- The SOW required that two team member speak French at the FS/3 level, but there was only one French speaker.
- The SOW required that none of the team members have previous contract experience with AELGA. One team member did -- on two separate occasions.
- The SOW required that all three members of the team be able to withstand a rigorous travel schedule in Africa. One could not go at all because of this.
- The team apparently failed to produce an appropriate product.

Improper References and Citations

A list of references appears near the end of the report, but it does not match with many of the references that are cited in the text.

Quotations within the report have been altered, with the addition of italicized parts inserted by the evaluation team, not by the original authors of the quotes. This is misleading and misrepresentative.

Is This a Debate or an Evaluation?

The second draft of the report has lifted selected parts of the AELGA review of the report's first draft in an attempt to delineate lines of debate between themselves and the AELGA project on various issues. *This is inappropriate for an evaluation report!*

Inconsistent Perception of Time

The evaluation team conveniently uses information that it obtained after the completion of the first draft to support its arguments, but fails to recognize that AELCA has carried out activities

during that same time interval as well. The report should be more objective and adopt a standard time frame in which it operates, not various time frames to conveniently accommodate its own arguments or as fuel for debates.

External or Internal Evaluation?

The evaluation dwells on the idea that theirs is the first external evaluation of AELGA. The AELGA Mid-Term Evaluation (1989) was external in that it was conducted by a AAAS Fellow (AAAS is external to USAID) who did become part of the AELGA staff (4 years later) and two other contractors, both of whom at one time or another were either direct hire USAID employees or accepted contracts from USAID in their past. The team also wrongly identifies several other evaluations as being "mixed" or "internal." The 1993 AELGA assessment, for example, was completed by an ex-AAAS-Fellow who was on a short-term contract to conduct the assessment. As another example, the Biological Control Evaluation (1994) was carried out by one person on AELGA staff, and two not even in the employ of USAID, but the team referred to it as being totally internal. *It is ironic and important to note that by the report's own definition (because each of the team members was employed by or on contract with USAID at one time or another) this formative evaluation is also internal.*

Along these lines, the report attempts to invalidate the 1989 AELGA Mid-Term Evaluation, but then, in other parts of the report, the Mid-Term Evaluation is referred to as an "official planning document." This is just one of many instances of inconsistency throughout the report regarding AELGA and other USAID documents.

Inappropriate and Misleading Focus

The vast majority of the report's arguments fail to recognize that grasshoppers are a focus of AELGA (the word "grasshopper" is even part of AELGA's name). Many of the negative arguments concocted by the team to show that proaction and strengthening crop protection services are not worthwhile are based solely upon an assumption that AELGA only works with locusts. This is a critical flaw in the report's reasoning and in the way in which the evaluation was carried out.

AELGA PROJECT PAPER AND AMENDMENTS

Misunderstanding of Project Paper and Amendments

The evaluation team concentrated to a large extent (in the second draft only) on stating that the AELGA Project Paper (PP) is inadequate and has not evolved throughout the 8-year life of the project. There is an obvious misunderstanding by the evaluation team about the nature of amendments to the PP. Amendments are part and parcel of the PP once they are approved, and there are 10 approved amendments to the AELGA PP. While the evaluation report seems to recognize the existence of the amendments (including their content), it is entirely unaware that these amendments constitute official administrative and technical revisions to the original PP.

Thus, the report's assertions that 1) there has been no evolution of AELGA's PP, and that 2) AELGA's evolution has been unsupported by official documentation are both false.

This point is particularly important in that the evaluation report repeatedly focuses on the ideas that 1) early intervention was never officially recognized in the PP, 2) AELGA should not invest in capacity building for national crop protection services, and 3) AELGA is acting unilaterally in its support for early intervention and for national crop protection services. *The report states that AELGA has not abided by its PP; in view of the fact that the PP was amended 10 times to include early intervention and capacity building at the local level (among other things) the evaluation team's positions on these matters are completely unjustified.*

AELGA Does Both Development and Emergency Response

The report repeatedly states that AELGA is a "development" project, and that AELGA has changed from doing emergency response to doing only developmental activities. In fact, AELGA is unique in that it has evolved, through the adoption of PP amendments, to incorporate preparedness/preventive activities into its mandate for responding only to emergencies. In this way, AELGA is bridging disaster management with development -- an aim that has for many years been espoused by USAID's administration. While AELGA has been carrying out training programs, research and other "developmental" activities, AELGA still responds to emergencies, as it did during the 1992-4 locust outbreak, the 1992-3 outbreak in Madagascar, and the recent October 1995 outbreak in Eritrea. *The evaluation report is mistaken in identifying AELGA solely as a "development" project. There is no documentation in existence that defines AELGA as being simply a development project. The conclusion of the report that AELGA is only a development project is false.*

In some places in the report, the evaluation states that AELGA does "disaster relief." This is untrue -- there is a difference between disaster relief and disaster response.

THE REPORT IS AGAINST STRENGTHENING NATIONAL CROP PROTECTION SERVICES

The Report is Against Strengthening National Crop Protection Services

On this issue, the report makes many disparaging comments regarding the wisdom of strengthening crop protection agents, while at the same time recognizing that the PP amendments, the OTA report, the AELGA mid-term evaluation, the AELGA assessment, the PEA, and the SEAs all urge the promotion of self-sufficiency through support for national crop protection services. The report then contradicts itself in many places by resigning itself to activities aimed at strengthening the crop protection services, while also promoting the idea of forming separate locust control units in remote areas of each country for an indefinite period of time. At the same time, the report (wrongly) identifies AELGA as being a development project, but then disparages development work. *In essence, the report is not coherent on this issue.*

The report states that national crop protection services have been failures in general, but the report fails to generate any sort of evidence for this sweeping generalization, nor was the team tasked with doing a general assessment of African crop protection services. The report lacks analysis of crop protection units in the evaluation, but it promotes the notion that all African crop protection services are failures and are thus unworthy of support.

The report repeatedly indicates that the original PP "rejected" strengthening national crop protection services, but PP amendments contravened this. *While the evaluation team does recognize that the PP, as amended, promotes strengthening crop protection services, they completely ignore these amendments when denigrating AELGA's work with crop protection services as being inconsistent with project documentation.* Further, as the report itself indicates, the AELGA action plan (1987) calls for training host country nationals to "maintain control of the threat posed by locusts and grasshoppers." So why does the evaluation team actively choose to ignore PP amendments and the AELGA action plan?

The report promotes the idea of forming separate locust units that would be stationed in remote corners of the continent. The donors would pay for this, and it would be for an indefinite, probably permanent, period of time. These units would have to be supported by donors even during long recession periods (no locust activity). *This is not sustainable nor does it constitute development.*

The report argues that it is foolhardy to invest time or effort in strengthening crop protection services because "locust infestations do not respect national boundaries." The team should be reminded that no pest insect respects national boundaries -- it is doubtful, in fact, that any insect on earth recognizes or respects national boundaries, let alone understands politics. Furthermore, the report focuses on locusts only and has ignored the fact that grasshoppers are also part of AELGA's mandate. Grasshoppers differ in that they do not fly in extremely mobile swarms.

On page 85 of the report, very cursory information (the team admits on the same page that this information is both "out of date and superficial") from a 1987 inventory is quoted. The fact that this material is outdated is very important as it does not reflect the impacts of development work done after the plague ended in 1989. *The use of this information is misleading.* The fact that it is superficial speaks for itself. The fact that the evaluation has such a difficult time finding viable documentation to support its many unsubstantiated claims and opinions is indicative of an inappropriate approach to fact finding.

The Report is Against Train-the-Trainer Program

The report, even in its second draft, demonstrates a lack of knowledge about AELGA's train-the-trainer program. In view of this, and the fact that the team member who was supposed to deal with training never traveled to Rome or Africa and is not even an author of the report, any "doubts" about AELGA's training program on the part of the evaluation team should be

viewed as being dubious. See **Appendix B** for comments from much more informed parties (these comments were ignored by the team).

The report repeatedly has labeled AELGA's train-the-trainer program as a "proactive" training program. *This is an arbitrarily fabricated and misleading moniker which does not accurately reflect AELGA's training programs.* While proaction is discussed as part of the curriculum, a wide range of other topics -- and strategies -- are also taught.

The report failed to mention that AELGA not only supported the three phase train-the-trainer program in Eritrea, but it also supported the publication of a locust control training manual in Tigrigna.

The report wrongly describes AELGA's bilateral training as occurring at the "central, regional, and field level." AELGA's train-the-trainer program was elaborated upon very clearly in the review of the first draft of the evaluation (it is carried out at the crop protection officer, field development agent, and farmer leader levels).

The report did not mention that USAID's Global Bureau's IPM CRSP training in Eritrea is being modeled after the AELGA train the trainer program.

The report inadequately characterizes AELGA's train-the-trainer courses by omitting two of its most important facets: teaching methods and development of action plans.

The report also fails to mention a plethora of other aspects of the training courses, particularly with regard to institutionalization of the training at all levels in the host country, production of training manuals in the native language, and in-country development and implementation of self-monitoring tools. That the report fails to even recognize the existence of these things is problematic.

The report reflects a basic misunderstanding of AELGA's train-the-trainer courses when it criticize AELGA for not training pilots during those courses. The courses were for crop protection agents, field development agents, and farmer leaders. *They were not courses designed for aircraft pilots.* It is difficult to conceive of how the team could conjure up such an idea when the training courses were described to them on many different occasions. If the team feels that AELGA should devise a course to train pilots, then it should make that recommendation rather than by denigrating training intended for crop protection service personnel and farmers. Along these lines, the report fails to recognize that *AELGA has supported training of pilots -- in fact, aerial pilots were trained at a special crop duster school in Tulare, California, in 1995.*

The report seems to believe that farmers and extension agents should be able to demonstrate that they can, alone, carry out proactive control in order to justify investment in it (pg. 89, pare. 2).

The idea that only farmers and extension agents will be conducting control operations is far fetched, and has never been proposed by anyone. It is inconceivable that the evaluation could even come up with such an obviously unrealistic requirement.

The report also alleges that the Nairobi regional biocontrol training course (1995) involved participants that were inappropriately selected. In fact, as was detailed in AELGA's review of the first draft of the evaluation report, all of the high level researchers who were trainees were nominated by the appropriate agencies in their respective countries and then those nominees were carefully selected by AELGA based on their experience and current responsibilities.

It is ironic to note that the evaluation team entomologist himself, as recently as 1994, has recommended that AELGA and USAID/Senegal carry out training along the same lines as what AELGA is doing now.

The Report Favors Creation of an Unsustainable Permanent Locust Control Modality

While disparaging AELGA support for strengthening national crop protection service capacity for carrying out control, the report also strongly urges that AELGA support separate locust units located in remote areas on a permanent basis. These units would, according to the report, be devoted solely to locust control, even in long recession periods, and would be presumably supported by the donors for an indefinite period of time. Since there is obviously no developmental angle to this, such an undertaking would be utterly unsustainable. A proposal submitted by FAO/IFAD in the early 1990s outlined just such a plan -- for West Africa alone -- at a cost of \$55 million for five years; the plan was unanimously rejected by the entire donor community. Promulgating the concept of such units makes little sense in terms of development, sustainability, and it presumes that AELGA can force locust affected countries to form such units in each of the desert locust recession area countries (more than 15 countries!).

The evaluation failed to indicate what the affected countries would prefer. If USAID was to adopt this modality of indefinitely maintaining unsustainable locust units, it would clearly represent an inappropriately donor-driven agenda. Locust-afflicted countries have all agreed to implement EMPRES in the central region of the desert locust's distribution area, and EMPRES is being developed to help enhance, catalyze and facilitate national crop protection services in their efforts to control locusts. The fact that the EMPRES concept serves to bring about eventual self reliance has taken hold in West Africa, too, where a separate EMPRES-like program is being developed (the funding, so far, is going to be provided by the African Development Bank and possibly others).

A Weak National Crop Protection Service Means a Weak Regional Organization

Because regional locust control organizations, including DLCO, fall under the jurisdiction of the national crop protection service while conducting operations, a weak crop protection service will

not be advantageous to DLCO operations. The report's belief that DLCO seems to operate independently within national borders is not realistic.

RESEARCH

The report fails to recognize that AELGA supports research on vegetative indexing, meteorology, botanicals, and insect growth regulators in addition to the l/g biocontrol research. All of these facts were in the review of the first draft of the evaluation, but they were ignored.

One part of the report says that technicians trained through AELGA supported l/g biocontrol research activities were trained then abandoned, and charged that such trainees have been left only with "memories." Elsewhere in the report, however, it says that "The nationals involved in laboratory production and assays, with whom the evaluation team talked in both Mali and Madagascar, are hard working and dedicated to their work. They have all received training by MSU in the specific tasks associated with their positions." This is contradictory.

The report also states that, with regard to the MSU l/g biocontrol research which is conducted in collaboration with African research institutions, "true institution building has not been provided." The evaluation team has ignored all of the comments provided by reviewers, particularly from MSU and AELGA regarding this issue (**Appendix C**). The report fails to indicate what "true institution building" means, or at least how it differs from what MSU has provided.

On the issue of donor coordination in research, see **Appendix C**. The assertions of the report, such as a statement that GTZ precipitated USAID research in Madagascar, are false.

ARMYWORMS

The report states that, with regard to armyworms, "AELGA has taken over" the responsibility from DLCO, FAO, and the UK. *This is false.* All AELGA management has done is to add armyworms to the PP through an amendment. This is in case USAID assistance will be needed to support research to combat armyworms or to render emergency assistance for armyworm outbreaks if necessary. DLCO, FAO, and the UK have maintained their significant roles in dealing with armyworm. AELGA has supported the publication of an armyworm control manual *written by an armyworm specialist from the UK*. It is unknown as to how the evaluation team could arrive at such a wrong conclusion when there are simply no facts in existence to support it.

REPORT INAPPROPRIATELY OVEREMPHASIZES SUPPORT FOR ONE PARTICULAR REGIONAL LOCUST CONTROL ORGANIZATION

The report openly favors the strong support of the Desert Locust Control Organization (DLCO) which is in serious arrears, and seems to suffer from mismanagement. It should be understood that one of the evaluation team members was once the Senior Technical Advisor for DLCO.

Several of the reviewers of the first draft of the evaluation report indicated that a bias toward this organization is apparent.

While calls for unqualified support for DLCO are pervasive throughout the report, no such support is being urged for other regional locust control organizations, such as IRLCO, OCLALAV, and the Maghreb Task Force. *Why?*

There is no mention in the report that AELGA does support these other regional organizations, especially the Maghreb Task Force which proved itself to be very effective during the 1992-1994 campaign in Mauritania and parts of the Sahel.

Oddly, the report states that DLCO has been incompetent and that it should be trained by AELGA -- but that national crop protection services should not be trained by AELGA.

DLCO must operate under the direction of national ministries of agriculture. A potentially weak ministry of agriculture will hinder the ability of DLCO to operate effectively. By not training national crop protection services, we might adversely affect DLCO's operations.

The report argues that, among DLCO's mandate countries, Sudan and Ethiopia have sufficiently strong crop protection services, and that Uganda, Tanzania, and Kenya do not have to worry about desert locusts. That leaves Eritrea, Djibouti, and Somalia -- which is apparently how the report justifies its call to give DLCO unqualified support. Eritrea has already demonstrated that it can effectively direct locust control operations. DLCO refused to operate in Somalia until pushed into it by AELGA and FAO. *That leaves only Djibouti as being the sole rationale for heavy reliance on DLCO.* The report also fails to recognize that DLCO does not only control desert locusts, and that DLCO has conducted operations against other pest species (armyworm, migratory and red locusts, and quelea birds) in member countries -- Tanzania, Uganda, Kenya, etc.

TECHNICAL ERRORS

For each of the following, the evaluation team should be required to show supporting documentation.

There are a number of fundamental errors that persist in the second draft of the evaluation report. These errors, in many cases, have a direct bearing on the quality of the logic used throughout the report, and therefore upon the conclusions and recommendations. The following are some of the errors that have persisted in this draft, even though each was addressed in reviews of the report's first draft.

In the report, the timespans of each locust outbreak/plague is very inconsistent, and in some cases wrong by all accounts. According to all published accounts, it was the 1986-1989 plague, the 1992-1994 outbreak/upsurge, and the 1995 outbreak in Eritrea. The report should stick to the facts.

The opinion that the 1992-1994 outbreak was part of the 1986-9 plague is absolutely unsubstantiated. There are no publications or reports that support this. *The two-person evaluation team "hypothesis" that the 1986-9 and the 1992-4 locust episodes are one in the same, despite a 4-year interlude, is being used by the evaluation team to argue that early intervention is a failure.* The report states that there is evidence to support their claim, but they fail to reveal it.

Similarly, the team makes the argument that because the same species were involved in the 1986-9 plague and the 1992-4 outbreak, the two episodes were therefore one in the same. Even if it were true that the same species were involved (which it is not), that would not constitute a rational or compelling argument that the two episodes were related. *This represents an error in the report's reasoning.* Again, the report states that there is evidence to support the team's assertion, but no evidence is provided.

Further, the locust species during the two episodes were different, as has been explained in the AELGA review of the first draft of the evaluation report (**Appendix D**) and in various publications which have apparently been ignored. This needs to be rectified as it represents *another error that is used to support unsubstantiated claims.* The evaluation report's assertion that the same species were involved is completely unsupported by any reporting whatsoever, whether published or unpublished.

Contrary to the implications of the report, biological control is one IPM tactic, rather than being totally separate from IPM.

The report, attempts to discredit early intervention by using a misleading quotation from an unpublished paper by P. Gruys, a consultant for FAO, which states that the "preferred strategy during the 1986-1989 campaign was to attempt the prevention of upsurges". While this was preferred, it was not effected and thus the evaluation report's argument is a misconstrual. Every published account, incidentally, indicates that an early intervention approach was not adopted, and that early intervention would be preferred. This is why the international community -- and the U.S. Congress -have been moving inexorably toward the realization of early intervention.

The evaluation team inappropriately uses a "thumbnail sketch" of bulletized AELGA activities provided to the team at the outset of their evaluation so that they would be aware of the range of issues at hand. In the "sketch", which is not an official or published document, the team takes offense that the 1992-1994 campaign was stated to have averted a plague. This "sketch," not

distributed to USAID decision makers (or anyone else, for that matter -- it was written in 1/2 hour solely for the team), was in no way intended to misrepresent proaction or to misguide the team. The team, however, chose to elevate this "thumbnail sketch" to the degree to which it is compared directly to scientific documents, and discrepancies between the two are emphasized. The report was unable to show that AELGA has made the sort of statements that it accuses AELGA of making in published or official contexts. AELGA has promoted early intervention and has indicated that early intervention has contributed toward the cessation of locust activity in the outbreaks that have occurred after 1989. *For the evaluation team to equate a over-simplified thumbnail sketch with official policy documents and scientific journal articles is unprofessional and inappropriate.*

Contrary to the AELGA review of the first draft of the evaluation and numerous publications, the evaluation *team persists in maintaining that significant quantities of locust swarms were blown to sea in 1992-1994 when this actually occurred in 1988.* While the evaluation team entomologist did report that locusts were moving to Cape Verde, there was no reliable quantification of this movement, and it indicates that the outbreak was spreading to Cape Verde rather than causing the demise of the outbreak. There are no documents that indicate that this movement of locusts contributed to the outbreak's decline. Movement of locusts from West Africa to Cape Verde is not unusual by any means. On the other hand, locust swarms in massive numbers were actually blown far into the Atlantic in 1988, and this has been cited in several documents, including some which are published, as being a factor for bringing the 1986/1989 plague to a close. The evaluation report, however, in its first draft failed to recognize this, and instead erroneously asserted that this sort of locust movement was more important in 1993 than in 1988. This is an unsupportable position.

The evaluation report is in error when it insists that the 1995 locust infestation of Eritrea originated within Eritrea. The facts are, based upon FAO on-site reports, Eritrean Ministry of Agriculture reports, FAO bulletins, AELGA on-site visits to the locust breeding areas in Eritrea and to the highlands where the swarms were, and on reports from Chad and Sudan, that the *swarms originated in Chad and Sudan. The report's position is unsubstantiated.* The report's litany of "locust trajectories" is superfluous in that the general swarm movements in 1995 are known. The rationale the report uses (pg. 54, paras. 4-6) to justify this point is: 1) The Eritrean Ministry of Agriculture *is lying (!)*, 2) that only 30% of all hopper bands are found (this was based on a personal communication with persons not even involved with locust control), 3) that locust movements are based on wind conditions (this in and of itself makes no case for the report, and anyway, the wind was bringing the locusts from the west -- Sudan and Chad -- to the east), 4) the irrelevant, unproven, and undocumented idea of "locust trajectories," and 5) a perplexing assertion that the swarms may have even come from Somalia!

Then the report states that it doesn't matter whether the swarms originated in Eritrea or not -- early intervention was still a failure. How can this be argued when the few hopper bands in

Eritrea (progeny of arrivals from Sudan and Chad), which never became adults, were controlled immediately, and the swarms from Sudan and Chad were eliminated (mostly by the crop protection service) within two months? *This seems to be a very intransigent and confused argument without substantiation.*

To make matters worse, the report then blames AELGA for not having controlled the swarms in Sudan! USAID is not permitted to work in Sudan at this time. The evaluation team labels this a "design weakness," because it reflects on the design or strategic decision of strengthening national crop protection units rather than regional organizations. *This is totally unfounded opinion.* Here are the facts: USAID cannot support DLCO, a regional organization, to conduct operations inside Sudan either. The real reason for not providing assistance at this time to Sudan is part of the U.S. foreign policy.

FALLACIES ABOUT AELGA

AELGA has not responded to pest outbreaks beyond its mandate countries. *The assertion that AELGA has tendered assistance to pest emergencies beyond its geographical mandate is not true.*

The assertion that AELGA has "officially" switched from activities in West Africa to East Africa is *untrue*.

In its treatment of emergency assistance, the report fails to include the 1995 outbreak in Eritrea, but singles out Niger as a recipient of emergency assistance from 1989-1994. This does not correlate with what actually happened.

The report says that AELGA has "given up" on trying to reduce l/g populations permanently. This is wrong for two reasons.

1) Even in a purely preventive strategy, the aim may not necessarily be to permanently reduce l/g populations (this is a weak assumption on the part of the evaluation team when one considers that recession populations are solitarious, hence conventional control operations against them would be economically and environmentally unlikely). Even a preventive strategy will likely rely upon well timed interventions when there is the appearance of a brewing outbreak.

2) AELGA has not "given up" on prevention. AELGA's research initiatives, training, material support, promotion of EMPRES, donor coordination, and even proaction itself all assist in the eventual development of the ultimate ideal: prevention. To say that AELGA has simply scrapped the concept is untrue, and there is no basis for concocting this assumption.

The report says that AELGA trained more than 500 extension agents and farmers during the 1985-9 plague and the 1992-4 outbreak. AELGA's training has primarily occurred between campaigns, not during them.

The evaluation team wrongly implies that OFDA disaster declaration assistance to Eritrea was because AELGA and FAO could not move fast enough. *This is not true.* In fact, the OFDA funds were used to buy a truck (which AELGA cannot procure as a result of USAID's position on procuring vehicles), not pesticides. *The AELGA-purchased pesticide arrived at the same time as the truck, and the pesticides were used against the infestation.*

The evaluation report promotes an idea that AELGA has omnipotent powers in that "AELGA is best placed to fix" disaster declarations made solely by U.S. ambassadors (pg. 80). *That AELGA should be held responsible for ambassadorial decisions to declare disasters is very unrealistic.* In the case of Eritrea, 1995, AELGA told the USAID mission that the situation was not a disaster, and that a disaster declaration should not be made. The ambassador agreed to postpone his declaration for one week, but he made it anyway, as is, apparently, his right as an ambassador. *AELGA does not make up the rules for the U.S. State Department, or for U.S. embassies.*

PESTICIDE ISSUES

The report, even after being corrected by several reviewers of the first draft, *still does not recognize AELGA's pesticide disposal and storage activities in Niger (NDDP and pesticide stock consolidation), Tanzania, and Eritrea. Furthermore, instead of recognizing USAID efforts, the team writes an entire paragraph espousing the work of GTZ!*

In its treatment of pesticide issues, the report fails to acknowledge that AELGA does pesticide testing to determine the viability of existing stocks and also that AELGA conducted a regional workshop on disposal of obsolete pesticide stocks and empty containers in Niger, 1990.

Some of the team's comments on pesticide stocks are pure speculation -- they say that unlabeled stocks are the property of DLCO, then they make a quantum leap to say that those stocks were donated from USAID *without even knowing the identity of the pesticides.* Such broad speculation should be deleted from a supposedly objective evaluation.

In the second draft of the evaluation, the team offers excuses for not having visited the pesticide storage facilities -- they thought that the equipment storage site was the pesticide storage facility. This is an error that is difficult to comprehend because pesticide storage facilities generally have pesticide barrels in them -- the equipment storage facility clearly does not. This did not prevent the team from thinking that the facility was a pesticide storage site anyway, and to draw sweeping and negative conclusions based on that.

The report alleges that AELGA's review of the first draft report says that AELGA is not responsible for doing disposal. *This is not true -- it is a misrepresentation of what the AELGA staff actually wrote.* AELGA has never stated that it is not responsible for doing pesticide

disposal work. In fact, AELGA suggested that other offices and bureaus in USAID should also assist in addressing this large issue.

The report suggests that AELGA do a survey of pesticide disposal problems throughout Africa. As was made apparent in AELGA's first review of the report, FAO has already done this in many countries. Also, FAO has a project dedicated solely to explore pesticide disposal options and to inventory the problems. *The evaluation team should have conducted appropriate interviews at FAO and/or read the documentation made available to it prior to arriving at premature conclusions.*

TABLES AND FIGURES

Table II-1 (pg. 8)

This is a figure, not a table.

This figure is very misleading. It breaks AELGA spending into compartments, more than half of which shows up as "Locust Control Organizations." This is both ironic and wrong. It is ironic in that the report makes repetitive aggrieved comments about AELGA's lack of support for DLCO, but it shows that AELGA has put 53% of its funding into locust control organizations. More importantly, it is wrong because these funds did not go to support locust control organizations, but were instead shunted through FAO to support the other categories in the pie chart.

Also the pie chart fails to show the amount of funds given over to emergency outbreak control and scouting which is what then funds to "locust control organizations" were really used for.

Table III-1

Purpose of this table is very unclear -- it fails to show anything useful and it has many errors.

Table III-3

Table is in error in 3 out of 4 places regarding whether the evaluation was internal, mixed, or external.

Table V-6

Content of the table is, by the report's own admission, inaccurate and should therefore be deleted.

EARLY INTERVENTION

The report repeatedly stresses that the AELGA PP explicitly does *not advocate early intervention*. *This is erroneous because PP amendments do specifically support early intervention and preparedness.*

The report appears to be negatively obsessed with the idea of early intervention shows not only a misunderstanding on their part regarding the unanimous direction of the international community, but rancor that AELGA has adopted a name for it (proaction). *The report's preoccupation with this is much ado about something that virtually everyone (except the evaluation team) agrees on as a matter of common sense.*

The report seems to be in favor of allowing outbreaks to go unchecked to "prove" that they can become plagues. The world already knows that outbreaks can magnify into full-blown plagues as was illustrated most recently by the 1986-1989 plague. What is the real point of permitting an outbreak to become a plague now that we know that plagues are real occurrences -- a fact established since Biblical times? Further, the team's suggestion that we allow outbreaks to become plagues would surely be even more severely criticized by them (and others) as a failure to respond. This is clearly an intransigent "damned if you do and damned if you don't" position adopted by the evaluation team. To even embark upon an argument of this is beyond the capacity of a short project evaluation, and it was certainly not within the team's scope of work to urge such sweeping decisions on the part of AELGA when direction in this regard has already been established. Elsewhere in the evaluation, the intransigence is highlighted by the following statement "Few if any donor nations will be willing to stand by and let a l/g plague run its course..."

Furthermore, during the 1992-4 campaign, the evaluation team entomologist himself indicated in his written communications and preliminary report that emergency use of helicopters and multiengine large aircraft in Senegal may become necessary. AELGA cautioned against this idea and the outbreak was controlled in a month by the crop protection service and small fixed wing aircraft.

The evaluation report still does not clearly depict proaction, and its attempt to discuss the topic is therefore handicapped. In the report, "a flexible strategy" and "a call to action" are cited as being inherent to proaction but not to prevention. *This is false.* A preventive strategy will also need to be flexible and calls to action will likely be necessary in many scenarios. The report implies that a preventive strategy will be rigid and static.

The report states that proaction will aim to reduce "the size and frequency of future l/g infestations and the damage done by them." *This is false.* A proactive strategy deals primarily with outbreaks as they occur; it does not necessarily take action against locust populations at any given time with the expectation that such action will definitely have ramifications on future locust outbreaks (that is, beyond the outbreak wherein proactive interventions occur).

The report uses only the original (unamended) PP to argue against early intervention. The evaluation report, however, failed for the most part to understand the meaning of PP amendments. AELGA PP amendments specifically, according to the report itself (in contradiction to itself),

"solidified the idea that AELGA's job was to help Africans keep locusts/grasshoppers under control and not only react to locust/grasshopper plagues." *Amendments are part of the PP.*

The report indicates that early intervention failed in Eritrea in 1995 because the U.S. Embassy in Asmara declared a disaster. In fact, despite this disaster declaration (which AELGA advised the Ambassador not to declare) which delivered a single vehicle to Eritrea, the Eritrean Ministry of Agriculture controlled the swarms that were arriving from Sudan and Chad within only two months. *To allege that early intervention, based on this example, is a failure is defies evidence and logic.*

The report takes great issue with the concepts of proaction, preparedness, and prevention, but indicates that the donor community, FAO, and the locust affected community of nations are in unanimous support of early intervention. *However, as the report strongly implies, the collective wisdom of the international community is no match for that of a two-person evaluation carried out in a few weeks. It was the responsibility of the team to accurately reflect the inputs of the international community and established documents rather than to promote what appear to be preconceived notions.*

Why does the report take such a negative stand on early intervention, but such a supportive stand for biological control research? The sole aim of biological control research is proaction and prevention.

One of the report's arguments against early intervention is the idea that armed conflict in some areas will hinder control efforts. This is true, but armed conflict situations in most places are not permanent, and this same argument can be applied against the unsustainable concept of supporting separate locust units indefinitely in those very same areas.

The report appears to be symptomatically intransigent by taking umbrage at the fact that the possibilities for proaction are not presented as absolute guarantees of success in the scientific literature. Absolute guarantees of complete success are not inherent to any discussion of developing strategies or approaches in scientific literature.

The report says that the 1992-1994 campaign proves nothing, even though an outbreak that showed all the signs of spreading far and wide (which it, incidentally did: India to Mauritania!) cannot be construed as being successful because it capitalized upon capabilities in place in the affected countries. *An aim of proaction is to capitalize on the strengths of each affected country to the maximum extent -- this highly intransigent argument in no way demonstrates that proaction has failed, but, rather, that it has succeeded.* Furthermore, the source (unpublished) from which the team quotes to show that resources, according to them, that remained from the 1986-1989 campaign is dated 1987. *This is years before the 1986-1989 plague ended.* How can such a statement made prior to the height of that plague even attempt to capture logistic realities *two*

years in the future, particularly when all experts agreed at that time that the plague would continue for 7-8 more years?

Furthermore, the fact that relatively rapid action in each of the infested countries -- from India to Mauritania -- contained further spread is ignored in the report.

While the team normally denigrates early intervention, the report contradicts itself by stating that "Collaboration since then (1988) has focused on prevention activities and on avoiding massive emergency assistance investments in insecticides and flight hours. This represents a healthy new model for FAO and AELGA was instrumental in establishing it."

"INEXORABLE ARITHMETIC?"

The evaluation team has used a term -- "inexorable arithmetic" -- to promote the idea that successful early intervention is not possible. They attempt to substantiate this idea by using purely theoretical calculations. In fact, the calculations, which are really no more than simple geometric multiplications, do not reflect reality at all. Models of other insect populations are never based upon simplistic linear math. Using this facile "model," the evaluation team virtually ignores all environmental and life table parameters that even the most basic ecological models must address.

MALI -- "SEDUCED AND ABANDONED?"

On the one hand, the team denigrates strengthening of crop protection services, but on the other, it chastises AELGA for "seducing and abandoning" Mali's crop protection service. The report states that "They feel they have gone backwards and remember the good old days when there was a plague and support from AELGA." *This is unsubstantiated opinion. It also ignores the dearth of assistance rendered to Mali since 1989 by AELGA (Appendix E). It should also be recalled that it was not AELGA who provided the lion's share of assistance during the 1986-9 plague ("the good old days"?), it was OFDA.*

More than one reviewer of the first evaluation draft listed the many contributions AELGA has made to Mali since 1989, and these can be found, as described by AELGA in its first review, in Appendix E. These were all totally ignored in the evaluation report.

EMPRES

The evaluation team admitted that it did not understand EMPRES. This, however, does not seem to have deterred them from making even more sweeping judgements about it.

The report states that EMPRES is a product of the 1992-1994 campaign. *This is false. EMPRES actually has been, in one form or another, in the making since 1989 because of the undesirable reactive approach taken during the 1986-1989 plague.* In the eyes of the international

community, the 1992-1994 campaign was promising enough to spur the continuation of developing an early intervention plan.

The discussion on where EMPRES "headquarters" might end up (pg. 76, 78) is pointless.

The team says that EMPRES does not promote preventive control; this is false.

The report says that EMPRES will not do research and training -- but the report fails to indicate that EMPRES will help to coordinate, and if appropriate, participate in both.

The report has indicated that AELGA is promoting the development of EMPRES without other donor support. This is false. The U.K., France, the Netherlands, Germany, and Japan have all pledged support, and Belgium, Sweden, and IFAD have been negotiating the level of support that each of them will provide.

In general, the report seems to demand that all aspects of EMPRES be crystallized before the concept of EMPRES can be promoted or developed. This seems intransigent, needlessly negative, and unrealistic given that the donors, locust afflicted countries, and FAO are all working together to create the right program.

ECONOMIC STUDIES

The evaluation report indicates that AELGA should be running its own economic studies, even when various universities have attempted this in a number of donor countries (e.g., Germany, Australia and the USA) with little success, and when the FAO has recently begun a comprehensive and more pragmatic economic study (in response to donor requests, and as part of developing EMPRES, and supported by Germany, the U.S., the U.K., and the Netherlands) which will likely yield more useful and meaningful information.

To state that "someone on AELGA staff should have the background for working on the agricultural economics of l/g control and spend a large percentage of work time on it" *is urging duplication of effort, and thus wastage of funds and staff time.* AELGA is funding a multi-donor economic study through FAO.

The report, on pages 62-3, outlines some challenges to doing an economic study. This information seems irrelevant.

AIRCRAFT

The report focuses repeatedly on the need to quickly call in aircraft, and on allegations that AELGA does not support aircraft use. The fact that AELGA does support aircraft use (**Appendix F**), though careful decision making is urged (how can one argue with that?), has been ignored by the evaluation. In addition to AELGA's demonstrable record of support for aircraft,

and for DLCO itself, the report even states that, in Madagascar, AELGA funded "more than 310 flight hours for helicopters, 187 flight hours for fixed wing spray aircraft and 241 flight hours for fixed wing survey aircraft."

Still, the evaluation report alleges that "there is a debate between AELGA and the evaluation team" on the use of aircraft. Since the evaluation has retreated from its earlier position that aircraft should be the first line of attack against locusts and that aircraft, including large multi-engine DC-10s and C-130s (explicitly criticized by Congress and cautioned against in the PEA, SEAS, USAID's environmental concerns document, and several scholarly publications) should be immediately called into play, *there is no debate*.

The report states that AELGA supported "an aerial survey by DLCO" in East Africa. *In fact, AELGA supported many survey sorties in East Africa, not just one, including the only aerial surveys to occur at all in Somalia in 1992-4.*

The report takes an AELGA review quote completely out of context (pg. 51, pare. 4) by bringing up the IFAD/FAO proposal to form permanent locust control units in remote parts of West Africa for \$55 million for five years. In fact, the \$55 million plan, rejected by all of the donors, was not aimed at supporting aircraft alone. The insertion of this discussion of the IFAD/FAO proposal reflects a very poor understanding of that proposal. Further, the report asserts that AELGA was a member of the FAO/IFAD team that produced the rejected \$55 million plan. This is a misconstrual -- AELGA is not part of IFAD or FAO which jointly submitted the plan. AELGA's name does not appear on the document, and though AELCA did review the proposal, this in no way constitutes joint authorship or support (in fact, AELCA rejected it).

The evaluation perpetuates the illusion of a debate by making the following nonsensical statement: "It is the evaluation team's conclusion that with respect to airplane use, the wrong lesson may have been learned from the 1985-1989 and 1992-94 infestations. It seems that planes may be conceived of as necessary when an upsurge grows beyond crop protection unit capabilities, rather than as a tool to prevent crop protection units from being overwhelmed." On examining this statement, there are two major flaws: 1) the team strongly implies that *virtually everyone associated with locust control over the past 10 years is wrong in their analyses of lessons learned from previous campaigns* (this was not part of the team's scope of work), and 2) AELGA does support the use of aircraft before ground based units are inundated (if they are threatened with inundation at all). *There is no debate.*

The report indicates that massive airplane intervention occurred in all three recent desert locust situations (1986-9, 1992-4, and 1995). In fact, *massive* aircraft use (which was widely criticized) only occurred in 1986-9 (which the report refers to as "the good old days"!), and never thereafter.

The report still seems confused by the problem with DLCO during the 1995 campaign in Eritrea. At first, the report declared that DLCO saved the day. AELGA corrected this by showing more coverage occurred by ground than by air and that there were problems with DLCO's ability to calibrate properly which resulted in pesticide wastage, low kills, and possible environmental contamination in populated areas. Now that the evaluation team has learned of this error, they have adopted another tack -- that the calibration problem was deliberate! In AELGA's many meetings with Dow Elanco over the past 4 months, both in Washington and in Eritrea, the calibration problem was not deliberate, it was an error admitted by DLCO. Then, to make matters even more confused, the team abandons its position elsewhere in the document by stating that DLCO's mistakes are AELGA's fault because AELGA should have trained a supposedly highly professional regional organization (elsewhere in the report, DLCO is lauded in no uncertain terms) and supervised all of their applications. The team's new position(s) is(are) obviously inconsistent, involve misinformation, and reflects intransigence.

The report quotes AELGA out of context (AELGA stated that aircraft, especially helicopters, can be mechanically problematic). The real issue is: when are aircraft justified? If AELGA's statements were accurately recounted, it would show that concerns emanate from indiscriminate use of aircraft, especially helicopters (they have been used in very flat areas -- and crashed there -- when fixed wing aircraft or ground units could have been used at less cost with the same efficiency).

The report engages in debate by refuting AELGA's observation that aircraft crashes -- as a result of mechanical failures and armed conflict are inconsequential in contrast to traveling by ground. While this may be true if one is considering all air and ground transportation (private and commercial), if we consider only locust control fatalities based upon crashes, more locust control personnel have been lost in aerial crashes than in vehicular crashes while conducting operations (a Nigerienne pilot died in an airplane crash just last December, and a French pilot also died in Niger even more recently in another airplane crash). *The team's attempt at rationalizing this position is an illogical exercise that attempts to employ irrelevant and misleading statistics.*

It should be noted that the quartet of experts the report relies on to support their debate are no longer actively involved in current locust issues. There is a plethora of other experts in America, Europe, Africa, and Asia who are currently involved with locust control and who are more familiar with today's issues.

The report neglects to even mention AELGA's role in generating aerial surveillance research through FAO with Westinghouse.

HOW DOES PRE-1986 LOCUST CONTROL DIFFER FROM POST-1989 LOCUST CONTROL?

The evaluation report asks, in challenging AELGA's promotion of early intervention, how does this differ from locust control prior to 1986? The answer is: dieldrin. *The evaluation report itself states that banning dieldrin (which the team seems to applaud) changed the face of locust control perhaps forever.* A switch from environmentally persistent and broad spectrum insecticides which can be applied in bands in remote breeding areas to sole reliance on shorter residual and more selective insecticides has been a positive step in terms of environmental conservation, but removed the most effective weapon from the locust control arsenal. The evaluation report, in some parts, seems to show awareness of this, but it is neglected in other parts.

The evaluation report only describes dieldrin as a toxic substance, which completely leaves its most distinguishing characteristic untold: persistence in the environment.

REPORT SAYS THAT AELGA "DOESN'T PLAY BY THE RULES"

In the absence of supporting documentation, the report says "With AELGA, a new hybrid project model has been invented.... which combines a long time period with the special dispensation accorded disaster assistance efforts. The lesson here is: You can't have it both ways. You can't at the same time be a disaster project and have special freedom, but be a long term development project and not play by the development project rules." The ideas in this statement are perpetuated throughout the report, but they occur without supportive documentation. AELGA has no "special dispensation." Special disaster assistance dispensation requires a USAID Administrator waiver, which AELGA does not have. *Hence, the idea that AELGA has special dispensation seems to have been an illusion.* But the most obvious question is: from where would we have learned this alleged lesson? The report simply makes this blanket statement without showing in concrete terms how AELGA might have been operating beyond its mandate, both technically and administratively. *The burden of proof is on the evaluation report to demonstrate how AELGA has not complied properly, rather than to make unsubstantiated assertions, then calling upon AELGA to disprove them.*

The report says that AELGA has unilaterally accepted a proactive strategy for locust control, and has unilaterally made the decision to promote and support EMPRES. *This is false.* Every PP amendment, evaluation, assessment, grant to FAO, and cable handled by AELGA must be signed by AFR management. Signatures on many of the above-named documents are obtained not only from *the DRC office director, but from the deputy assistant administrator for AFR Bureau.* The report's assertions that AELGA acts without license in USAID borders on being libelous, and caution to the evaluation team is urged.

AELGA has followed the guidance of the Mid-Term Evaluation, Congress (OTA report), the PEA, and SEAS. The PP amendments were developed and signed by USAID officials to facilitate the ability of AELGA to address such guidance.

The report alleges that AELGA has not developed success indicators. *AELGA did develop indicators by which to measure success with the DRC office in 1994-1995.* Indicators are, as part of USAID's new way of operating, part of the entire office strategy rather than for individual projects. The evaluation report seems to be unaware of the modalities in which USAID now functions and has drawn false conclusions about AELGA's adherence to existing USAID policies. Likewise, it is up to the DRC office, not AELGA staff, to accept appropriate indicators and to fold them into the overall office strategy, then to implement them. *AELGA has complied with USAID policy.*

USAID MISSIONS

The report states that USAID/Madagascar "rejected" AELGA-supported biological control research. *This is extremely misleading.* The fact is, USAID/Madagascar urged the research to begin, but when it's mission strategy was changed, the portfolio did not involve agriculture. AELGA was asked to support the research, and the mission welcomed its continuation. *In fact, USAID/Madagascar even sent a cable that stated that future locust outbreaks in Madagascar would be controlled solely by biological control and use of other tactics being developed through current research!*

AWARENESS

The report repeatedly makes two errors regarding publications, and *these errors reflect a misunderstanding of scholarly publications and negligence of AELGA's review of the first draft of the evaluation.*

- 1) The scholarly journal articles are *not "AELGA documents."* *This is a fabricated label.* Had the team looked at those articles, most of them clearly state that the article represents the view of the author only, and not necessarily those of USAID.
- 2) Had the team looked at the articles more closely or asked the author, they would have found that all but two of the articles were completed and submitted to the journals *before the author joined AELGA.* Of the two that were written while the author has been on the AELGA staff, one was written in its entirety in one night in a hotel room in Bamako, Mali. The other was written outside of office hours, and *it is the only published account of the 1992-1994 outbreak and campaign in existence.* Minimal time during office hours was spent during two or three phone calls to and from journal editors to finalize certain parts of the article. The insinuation of the evaluation borders on being libelous and the evaluation team should adopt a much more cautious, informed, and less adversarial approach.

It is ironic that the evaluation team denigrates the utility of the publications by AELGA staff while the *team itself used quotes from the articles copiously in their second draft of the evaluation.*

The report fails to mention the cables and memoranda that AELGA has produced for internal use in USAID -- for decision makers. There is no evidence for the report's contention that AELGA does not provide information on locust and AELGA activities for use within USAID.

THE REPORT'S RECOMMENDATIONS

It should be stated here that a great many of the criticisms posed by the report aim at project management, but the recommendations fail to address them. Many of the recommendations are redundant, some are very subjectively worded, and others are not recommendations at all. The following is an attempt to offer suggestions about them.

#. Recommendation as it appears in report.

■ AELGA comments -- accept, modify, or reject.

Project Design and Budget (pg. 22)

1. AELGA is an eight-year old development project, and should, therefore, use and abide by USAID development project management tools and procedures.

■ It is wrong to say that AELGA is an 8-year old development project when AELGA has never been identified as such in project documents. The burden of proof is on the evaluation to demonstrate that AELGA has, for 8 years, been solely a development project. This will be difficult to show in light of the emergency response AELGA has provided in 1986-9, 1992-4, 1995, and 1993 (Madagascar). AELGA has abided by project management stipulations and requirements throughout its life. The report fails to demonstrate that this has not occurred. If there are additional management tools and procedures, a recommendation should be made to the DRC office in this regard.

2. AELGA is the project implementation team, USAID/DRC is the project manager and administrator team.

■ This is not a recommendation; it is a moot statement. **[This comment has been incorporated into the revised report.]**

3. All decisions of a strategic nature must be approved and signed off on by USAID/DRC. Long-term commitments of USAID money and prestige, without full USAID/DRC understanding and official approval must be avoided.

■ The report is mistaken in implying that USAID/DRC or other managing offices are uninformed of strategic decisions. All AELGA activities are signed off on by DRC (or previous offices) management or by the DAA of AFR Bureau. The evaluation failed to show in any way that AELGA has not complied with USAID procedures. This recommendation is therefore

simply rhetorical and if it is to be accepted, it should be rewritten as: "USAID/DRC should continue to maintain awareness of AELGA activities and overall strategic decisions."

4. A logical framework should be developed which describes AELGA's current strategy and objectives. The Logical Framework should attempt performance indicators for the various l/g control subsystems (early warning, national crop protection units, research, etc.).

■ OK

5. Yearly work plans should be approved and signed off on by USAID/DRC. The main criterion for approval is clear contribution to the objectives of 1) reducing the frequency and size of l/g plagues; 2) reducing the damage done by l/g plagues; and 3) reducing expenditure on disaster assistance.

■ OK -- with the following modification: 1) include outbreaks with plagues in items 1) and 2). **[This comment has been incorporated into the revised report.]** Other criterion should include environmental protection, dissemination of information, and general international awareness.

L/G Control Concepts (pg. 28-29)

6. AELGA should develop and formalize a strategy based on the definition of proaction. Focus should be on the specific problems, places and phenomena that gave rise to the 1985-1989 plague.

■ OK -- but focus should also be placed on the 1992-4 outbreak, the 1995 outbreak, and the outbreak in Madagascar. **[This comment has been incorporated into the revised report.]**

7. It must be made clear how to tell when "proaction" is and is not happening, and how to distinguish between success and failure.

■ OK

8. AELGA should explain the difference between "proaction" and the strategy used between 1962 and 1985.

■ This has been answered in this review: dieldrin.

The Theoretical and Technical Feasibility (pg. 29)

9. Concentrate the intellectual resources of AELGA on testing and proving the feasibility of "proaction" in relation to the "inexorable arithmetic" of l/g population dynamics before plagues.

■ The idea of "inexorable arithmetic" is too simplistic to consider in any examination of living populations. It is a simple geometric progression that has no bearing on reality. This part of the recommendation should be modified to: "Examine the feasibility of proaction given various scenarios in which locust outbreaks are likely to occur."

9a. For example, how does the "proactive" approach propose to:
- reduce the population sufficiently so that those remaining revert to the solitarious state?

■ This should be rewritten to: "- reduce the populations sufficiently to curtail the continuation of the existing outbreak."

9b. - reduce the population sufficiently so that upon maturity no more than a few will reach suitable locations for successful breeding and survival of progeny?

■ This will be taken care of in 9a (above). Arrival of locusts in breeding areas is not a certain criteria for success or failure of proaction. 9b should be deleted.

9c. - reduce overall locust populations in wide areas in excess of 90' (or whatever number AELGA selects or is comfortable with)?

■ This is too speculative and hypothetical to work with credibly. Using a standard number for very situational occurrences would be an unwarranted oversimplification. Rather, 9a would be sufficient to deal with this. 9c should be deleted.

9d. In arriving at real estimates of control rates over generations of locusts, it must be realized that in 1995 we are working with: a) pesticides with shorter residual action than the formerly used chlorinated hydrocarbon pesticides; and b) *less* effective regional organizations now that support of the regional organizations by both national governments in Africa and donors has wilted.

■ This is not a recommendation.

AELGA Achievement of Goal and Purpose Level Objectives (pg. 39)

10. The burden of proof that AELGA's "proactive" strategy in 1993-1994 avoided a plague and also disaster assistance expenditure, lies with AELGA. The project has used the argument to obtain resources and very special dispensation (a long-term development project run according to short-term disaster assistance's more flexible guidelines).

■ This needlessly negative recommendation should be rewritten because the report is mistaken in stating that AELGA has special dispensation. Also, AELGA has not definitively stated in official documents aimed to obtain funds that proaction has averted plagues though AELGA has indicated that such early intervention has helped to curtail outbreaks and may have

avoided plagues. Therefore, this recommendation should be modified to: "AELGA should describe the early intervention efforts in 1993 and 1995 with the intent of illustrating how early intervention contributed toward the decline of those outbreaks and how such outbreak containment and elimination can serve to avert plagues."

11. AELGA should be encouraged to be as rigorous and cautious in drawing cause-effect conclusions regarding the effects of its efforts when communicating with USAID managers as when communicating with the scientific community.

■ This recommendation is unnecessary. The statements therein are in error. The report fails to show that AELGA has communicated differently with decision makers and the scientific community other than to contrast a thumbnail sketch given to the team for rudimentary guidance (it was not distributed to USAID decision makers) with scientific publications. Also, AELGA does not publish scientific documents, though individuals on AELGA staff do on their own time. The intent of this recommendation would be addressed in #10 above.

12. To facilitate further USAID support, AELGA should remove doubt that "proactive efforts not only reduce agri-economic damage, but also prevent full-blown plagues. The analysis must recognize that: 1) the 1992-4 and 1985-9 investments are not comparable, but rather build on each other; and 2) "proaction" will not always have a large previous investment on which to build.

■ This recommendation is based on two fallacies: 1) that the 1992-4 and the 1986-9 campaigns are not comparable. This is an arbitrary and unfounded argument aimed at discrediting a strategy that appears to be having more success than not. The idea that these two campaigns "build on each other" is nonsensical. AELGA, and the rest of the international community, in contrast with the two-person evaluation team, do not recognize that the 1986-9 and the 1992-4 campaign cannot be compared. Both involved origins in the same place, spread to other regions, and relied on nonpersistent insecticides. One was carried out using a reactive strategy and the other a proactive strategy. Of course they can be compared in this context. The argument that proaction will not have a large previous investment on which to build is also a fallacy. The information presented by the team about resource accumulation was taken from an unpublished paper written in 1987 -- well before the end of the 1986-9 plague -- before, in fact, the height of that plague. Also, one of the aspects of proaction is to attempt to ensure preparedness, thus the teams odd stipulation is nonsensical and shows a misunderstanding about proaction. Again, addressing recommendation #10 should be sufficient.

13. A useful tool would be a discovery procedure or epistemology for determining with some probability whether upsurges are plagues in the making. Obviously if such a tool is impossible, then maintaining that a plague has been prevented, as AELGA has done is problematic.

■ It is untrue that AELGA has maintained that a plague was definitively prevented. AELGA has indicated that the outbreaks have been contained and curtailed, largely through early intervention. In this manner, plagues could have been prevented.

AELGA, like the rest of the world, uses FAO and in-country reports of locust activity (and AELGA often goes a step further by sending someone to assess the situation directly) to determine the potential seriousness of locust outbreaks. For the record, in the 1992-1994 outbreak, FAO and other sources clearly indicated that it had the very alarming potential of becoming a full-blown plague. The outbreak spread west to Mauritania and east to India. That would appear, even to a novice, to be an undeniable omen of a possible plague. Addressing recommendation #10 would address the intent of this recommendation.

14. Suggested Advice to USAID Managers.

■ All should be deleted because these are not recommendations, and because each is based on errors of understanding/judgement, and others are addressed by recommendation #5.

14a. The costliness of reaction to plagues is not sufficient justification for investment in prevention or proaction. The proaction must show promise of preventing or reducing the seriousness of plagues for the investment to be worth it.

■ This is addressed in recommendation #10.

14b. Large plagues are relatively rare occurrences and most outbreaks and upsurges would not become plagues even if left alone.

■ This is completely unsubstantiated by the report. It is also a very dubious generalization in light of the fact that locust plagues have been shown to occur more frequently than is indicated by the report, even when controls were applied. From the late 1930's to the present, at least seven large plagues have occurred among only three species of locust. Had control not been applied, there is really no way of telling how many more plagues would have ensued.

14c. Therefore, caution is required in assuming, without sound proof, that lack of plagues, or damage from plagues, means that plague prevention (or proaction) has been effective.

■ This is addressed by #10. It should be noted, though, that "proof" is a term that should not be applied here. Unless outbreaks were allowed to run their course, no one would know with the absolute certainty that the report seems to unrealistically believe is possible in every instance. This should be deleted as being redundant and rhetorical.

14d. Decision-making based solely on internal evaluations, analyses and articles may prove faulty in the medium and long term.

■ The team is in error when it states that no external evaluations have occurred. The OTA report and the AELGA Mid-Term Evaluation are both examples of external evaluations. The other evaluations and assessments have either been external or mixed. In no case has USAID relied solely on internal evaluations. It should be noted here, not without some irony, that the formative evaluation under discussion here is, by their own definition, internal. This should be deleted as being erroneous and moot.

L/G Control and Management Mechanisms (pg. 57)

15. Pesticide disposal is an area where AELGA might attempt a large contribution, in terms of innovative ideas and generating collaboration if not investment. Reaction to the draft evaluation argues that addressing the pesticide disposal problems lies outside the AELGA mandate. The evaluation team suggests that pesticide disposal falls well within a clause statement in the Project Paper Logical Framework Purpose which reads "To treat the recovery and rehabilitation aspects of problems created by locusts and grasshopper pests."

■ This is not a recommendation, it is an argument. The report is wrong in stating that AELGA argues against doing work on pesticide disposal. The report also, in both drafts, failed to recognize the ground-breaking work that AELGA has done in pesticide disposal, which is a major flaw that has led to this sort of negatively stated recommendation. AELGA, for the record, stated that not all pesticide disposal problems have emanated from l/g control, and that other offices in USAID should collaborate in doing disposal operations. For the report to argue that AELGA should be solely responsible for all pesticide disposal problems without making a constructive recommendation urging that other offices in USAID be encouraged to address this problem is casting this issue in a very unnecessarily negative light. This item, though not a recommendation should be rewritten to become a recommendation: "AELGA should continue to address pesticide disposal issues, including urging the FAO pesticide disposal program to take concrete action, and to encourage more collaboration among relevant offices within USAID and other donors."

16. An inventory of stored pesticides, their condition and the quality of storage facilities should be undertaken, if such a data base does not exist already. Such an inventory was already recommended by an evaluation of USAID l/g efforts in Morocco. Substantial information on the quality of storage facilities in eastern Africa, including Sudan, Yemen, and other countries, is available in reports by Jensen at the Environmental Protection Agency.

■ Such inventories have been done and are on record with FAO and USEPA, and GTZ. More inventories will constitute a wasteful duplication of effort. This recommendation should be rewritten to: "An inventory listing of unwanted pesticide stocks in Africa should be obtained

and kept on file for consultation. If there is no such information in existence in certain countries, then AELGA could be instrumental in obtaining that information.” **[This comment has been incorporated into the revised report.]**

17. Serious consideration should be given to a funded action plan to disposal of all stored and obsolete pesticides. In most cases the Supplemental Action Plan is a good start. Pesticide disposal deserves a big budget and USAID should consider taking responsibility since many of the pesticides were bought with USAID and other donor money.

■ The fact that this would indeed require a big budget is something that needs to be addressed by DRC and AFR management. This recommendation does not seem specific to AELGA, but to all of USAID. Also, it fails to recognize AELGA and USAID’s continuing work in this realm -- in fact, USAID is a world leader. If DRC can obtain a sufficient budget, then the modified recommendation as written in #15 would be superior. What is a Supplemental Action Plan? Is this meant to be Supplemental Environmental Assessment?

18. DLCO’s spraying problems are AELGA’s problem too. The PEA, the OTA report and USAID’s Locust Management Operations Guidebook place the responsibility of assuring that USAID purchased pesticides are used properly squarely with USAID project management (AELGA). AELGA should systematically train DLCO and other aerial support groups, so that spraying errors are minimized.

■ First, we need to point out a few errors in this recommendation, and it should be indicated that the tone of the recommendation is needlessly combative. USAID project management is DRC at this time, not AELGA itself. AELGA can train aerial applicators (and it has done so already, which is not recognized by the report). In any case, the recommendation should be rewritten: “Unless aerial control organizations have demonstrated proper application techniques, supplying them with additional pesticide should be more closely examined. In some cases, it may be necessary to approach such organizations with the idea of conducting aerial application training to improve the quality of their services.” **[This comment has been incorporated into the revised report.]**

19. A meaningful evaluation of early warning and monitoring systems would require testing or probing of early warning and monitoring performance in terms of: coverage, rapidity of turn-around, accuracy, user-friendliness and above all utility in making decisions regarding proaction and prevention efforts.

■ This is not a recommendation. It should be rewritten: “early warning and monitoring systems should be examined and characterized to indicate where improvements have been made and where improvements are still required.”

20. Explore augmenting and improving early warning and monitoring through use of Desert Locust ecological surveys, DNA fingerprinting, checking locusts for evidence of long flight and historical wind and l/g trajectories.

■ The team admitted in their report that they did not adequately look at early warning, and that they could therefore not comment on it. This recommendation should be deleted on that basis alone. Also, FAO is already doing much of this -- they have a unit devoted to early warning and reporting. In any case, the recommendation, as modified in #19 is sufficient to address the intention of this.

21. With a proactive approach, be prepared for frequent requests for aircraft and calls on donors for reactive control.

■ This is an inappropriately worded recommendation because it presumes failure on the part of proaction -- which reflects the team's preconceived ideas. In any case, proaction will rely to a certain extent, depending upon the situation, on use of aircraft. This should be deleted.

22. On the one hand, AELGA and USAID should consider setting up an emergency fund to be used for control operations only, not to be used for training, research, and awareness.

■ OK -- but this will require DRC to locate such a fund. As is, AELGA tries to maintain a pragmatically flexible fund that can be used if necessary for emergencies, but otherwise is invested in preparedness and early intervention. If there is a choice between using funds for emergencies and for preparedness and prevention, do we step backwards to the much criticized way of doing strictly reactive control of the late 1980s or do we continue to push forward and make progress?

23. Funds are released from this fund only after an approved, detailed plan of work has been developed and approved by the Minister of Agriculture of the host country and the USAID Director.

■ AELGA has no comment to make on this other than to ask what constitutes a detailed plan of work, and for what? For locust outbreaks in general or for each individual locust outbreak?

24. AELGA and FAO criteria for funding aerial support should encourage national aerial units first, regional organizations second and commercial applicators third.

■ This was never discussed in the report, and there is no rationale for making this arbitrary stipulation.

■ The report denigrates national crop protection services throughout, and now they are getting first priority? This is inconsistent.

■ FAO generally contracts out for aircraft using granted AELGA funds. Once the grant is made, USAID technically cannot dictate terms. Also, FAO, in tandem with AELGA, makes decisions on use of aircraft according to the availability of aircraft and the extent of the outbreak. To make such sweeping stipulations is unrealistic. This recommendation should be deleted.

25. As a project output and as part of its "proaction" strategy, AELGA should have clear criteria for when and when not to use planes and should monitor and test against the criteria.

■ OK -- but it should be made clear that AELGA alone does not run anti-locust campaigns. AELGA is the project of just one of many donors. Anyway, campaigns are run by national crop protection services. Decisions are made at the FAO level and by the host country governments. On the other hand, AELGA can develop criteria regarding the appropriateness of aircraft use.

26. As part of its "proaction" strategy AELGA might develop a tool for deciding when, where and under what conditions planes are the necessary or preferable means for surveying or applying pesticides. Planes should be considered, not only as support for ground efforts when ground efforts are overwhelmed, but as a means to keep the pressure off ground units.

■ This would be dealt with by addressing #25 as modified. **[This comment has been incorporated into the revised report.]**

27. Data must be analyzed on aerial and ground performance during upsurges such as those in 1992-1994 and in Eritrea in 1995 to see what lessons can be learned. Some data of this type are presented in articles written by AELGA staff.

■ OK

28. The cost of aerial operations needs to be re-visited and compared to ground operations and to other aspects of the l/g control system AELGA is helping to build. Why are the recent FAO/IFAD estimates higher than others?

■ This needs to be rewritten to: "the economics of aerial operations needs to be explored in comparison to ground operations -- and how the development of ground operations and aerial operations can be justified in the context of development and sustainability." The question about FAO/IFAD is unrelated because it does not deal solely with aerial control or solely with ground control. The team does not understand the content of the FAO/IFAD proposal (that was rejected).

Research and Publications (pg. 68)

29. All AELGA big-research should be analyzed for the possibility of building a permanent big-research capacity and developing a biocontrol business or industry, with African scientists and business partners.

■ This is already being done in response to recommendations made in the biocontrol evaluation report (1995).

30. USAID should provide five-year financing and a regional program for the AELGA big-control research, or AELGA should finance the research until it has been transferred to more stable hands and act as a marketer and go-between.

■ AELGA agrees that longer term financing from USAID is important, but the evaluation report fails to understand that the other groups doing similar research are more unstable than USAID. Also, why should USAID cease funding a highly successful research project just to hand it over to another donor? This recommendation should be modified to: “DRC management should encourage USAID to finance AELGA-supported biocontrol research for five year increments rather than annually.”

31. All contracts USAID has with big-control research organizations should be analyzed to determine: 1) intellectual property rights; 2) responsibility of research groups to share profits with the countries, people, and governments who collaborated on the research. This is not to suggest that there are existing problems with the current contracts or contractors.

■ OK

32. In light of the difficulty of determining economic thresholds and criteria which are both analytically sound and acceptable to skeptics and proponents and the effort that has been expended by AELGA and others in the past without useful results, the evaluation team reluctantly supports the AELGA recommendations to co-fund FAO’s economic threshold research to the extent that it plows new ground.

■ Rewrite in more accurate and less subjective terms: “AELGA’s support of the collaborative economic studies being carried out through the coordination of FAO should be continued. These economic studies will determine the cost-effectiveness of controlling different levels of locust outbreaks, and the potential crop losses associated with different locust outbreak scenarios.”

33. Effort should be made to avoid the pitfalls discussed earlier in this Chapter and to include variables from economic analysis of disasters natural resource economics.

- This recommendation, as written, is incoherent. Delete it.

34. Factors from disaster economics which might prove useful to examine are costs to a country or region of: a) migration; b) disruption institutions and services; and c) disruption of markets. From the donor point of view, costs of food aid and other relief and disruption of donor development programs must be factored in (see Tables V-3 and V-4).

- This is being addressed in the AELGA-supported collaborative economic study being developed by FAO. So this recommendation is already being carried out. Recommendation should be rewritten to: "The economic study being collaboratively carried out with FAO and other donors to determine cost-benefit of different campaign scenarios (and factoring in numerous relevant social, economic, and technical considerations) should continue to receive support from AELGA."

35. The economic worth of l/g control should be combined with the probability of success of the control (be it prevention or proaction) to arrive at an investment criterion called "Expected Value." Ideally, to calculate "Expected Value," economic value is multiplied by the probabilities of success from a technical viewpoint and institutional viewpoints. An implication of the "Expected Value" approach is that no matter how valuable or worthwhile a project is, if it can not deliver on its objectives, it is not worth investing in.

- No need to re-invent or duplicate economic studies, nor was it the task of the evaluation team to design a study. Addressing #34 as modified should be sufficient.

36. Perhaps a judgement of whether l/g prevention-control is worth it in an absolute sense is out of our reach. But maybe we can compare the pros and cons of different types and degrees of l/g prevention-control. Table V-6 presents a for making the comparison.

- Again, addressing #34 as modified should be sufficient.

37. Find out how much time is spent on writing scholarly articles, what USAID policy is with regard the writing of articles for academic journals on project funds and how such writing fits with the Project Paper, Project Amendments and job descriptions of AELGA staff.

- The fact that scholarly journal articles were not funded by USAID at all is sufficient grounds for eliminating this recommendation. The AELGA review of both the first and the second draft of the evaluation report were ignored -- and both serve to answer the questions posed by this recommendation, and to indicate that the articles were either written prior to the author joining AELGA or on his/her own time. Also, these articles are not "AELGA publications," as is clearly written on each one of them.

38. Relate each AELGA publication to the question, “Who needs to know what to further project objectives?” before scholarly work is approved and begun.

■ Because no such scholarly publications have been produced or funded by USAID or AELGA, and because approval by USAID of private authorship is not required prior to writing the article, this recommendation is inappropriate. The public affairs office of USAID, however, does review the articles prior to their publication (even if the authorship is not officially representative of USAID), and this has been done in each case. Recommendation should be deleted.

39. Analytical work by AELGA staff might concentrate on the relation between the proactive approach and the population dynamics of locusts and grasshoppers. The relationship has been the basis of funding for AELGA, but the basis for it awaits in-depth analysis.

■ This is being addressed in #10 as modified. It could be rewritten to: “Thorough analysis of a proactive locust control approach and its potential impacts on locust population dynamics should be carried out.” But even this is not necessary in light of the modified recommendations (#10 and #34).

Donor Collaboration (pg. 80-81)

40. Division of labor according to who is good at what and who is interested in what is feasible and necessary. As a first step toward donor coordination with regard to concrete matters, undertake analysis of the type suggested by Table VI-1. The table should be filled out on a regional and country-by-country basis.

■ Rewrite to: “AELGA activities in relation to the activities of other donors and FAO should be tabulated similar to Table VI-1.” **[This comment has been incorporated into the revised report.]**

41. The evaluation team has the same questions regarding EMPRES as the questions it has about AELGA. That is, what is the technical, institutional and economic feasibility of the “proactive” approach to reducing the frequency and size of l/g plagues and the damage they do. Also, to what extent does AELGA appear to be making a long-term commitment with FAO or USAID’s behalf?

■ This is not a recommendation. Part of this question is answered in #10 as modified, and the rest of it is answered in this review. This “recommendation” should be deleted.

42a. With regard to EMPRES, there are additional concerns regarding:

- Unknown recurrent costs to support the program until its l/g prevention objectives are accomplished. To what extent is AELGA making a long-term commitment with FAO on USAID's behalf?

■ This is not a recommendation. Recurrent costs are outlined in the EMPRES plan for its first four or five years. The team should have known this if they had adequately reviewed the documents that pertain to EMPRES. The question that implies that AELGA makes unilateral commitments without USAID concurrence is addressed in the attached review of the evaluation report. This "recommendation" should be deleted.

42b. What will be the division of labor and responsibility among EMPRES, AELGA, the Desert Locust Control Commission and the FAO regional commissions? Will the coordination role of the FAO regional commissions be diluted or duplicated by EMPRES?

■ This is not a recommendation, and the evaluation should have answered this question as part of their SOW. In any case, the recommendation could be rewritten to: "The division of labor between EMPRES, AELGA, the DLCC, and the FAO regional commissions should be delineated."

43. AELGA should make sure that the CCC guideline conditions, as outlined in the USAID L/G Management Guidebook are adhered to when AELGA grants are involved and that USAID approves the activities and methods to be utilized before FAO allocates funds which involve control action. According to the Guidebook, the CCC should develop country action plans and forward them to FAO as a basis for an appeal for donor support. USAID Missions should prepare their own action plans. Both the Africa Bureau Strategy Paper and the AELGA Project paper reiterate this requirement.

■ The L/G Management Guidebook was written explicitly for doing emergency response, and it is, in the view of most, rapidly becoming obsolete. However, the basic intent of this recommendation can be addressed, and less verbosely, if rewritten: "AELGA should ensure that, prior to supporting emergency pest control operation funds either through grants residing with FAO or bilaterally, country action plans should be in place."

44. Redesign rapid response mechanisms, division of responsibility, definitions of disaster and within-country donor coordination. There must be agreed upon and universally distributed definitions, mechanisms and criteria for delivery of insecticides by AELGA/FAO and disaster assistance from OFDA.

■ This presupposes that AELGA can revise OFDA and U.S. Embassy procedures. The recommendation can be rewritten to: "AELGA should continue to advise OFDA, U.S. embassies, and USAID missions regarding the seriousness of outbreaks and whether or not, in AELGA's

perception, these outbreaks constitute disasters. It is, however, ultimately the decision of the U.S. ambassador as to whether or not a formal disaster declaration is made.”

45. AELGA and USAID need to set up an emergency fund to be used for control operations only, not to be used for training, research, awareness. Funds are released from this fund only after an approved, detailed plan of work has been developed and approved by the Minister of Agriculture of the host country and the USAID Director.

■ This presupposes that AELGA’s budget is sufficient to set up such a reserved emergency fund. AELGA already ensures this, albeit in a more flexible manner -- by which funds can, in the absence of an emergency, be used for preparedness and prevention. Given the current budget situation in USAID, and the fact that if such a reserved fund takes priority over preparedness this would constitute a major step backwards in terms of all of the guidance given through the Congress, the PEA, SEAS, Mid-Term Evaluation, and international community consensus. The recommendation should be rewritten to: “AELGA should continue to carefully gauge the probabilities of outbreaks and plagues such that funds can be reserved for emergencies that appear to be imminent, and to be able to make timely and reasonable ad hoc requests of emergency funds (presumably from the DFA) from USAID in exceptional circumstances.”

46. AELGA should design standardized, rigorous procedures for estimating the seriousness of l\g infestations and the resources and budgets needed for combating them.

■ This is highly simplistic in that it presupposes that all locust, grasshopper, and other pest outbreaks are the same. A “standardized rigorous procedure” is not realistic given the broad geographic, political, economic, biological, and environmental scope of possibilities that can arise. Some of the information that will be needed to refine modalities of doing early intervention will be addressed in the FAO coordinated collaborative economic study which will, in turn, aid in the evolution of EMPRES. Addressing recommendations #10 and #34 should fulfill the intent of this recommendation while not arbitrarily, unnecessarily and unrealistically confining decision-making tools to a rote “standard.” This recommendation is basically redundant with #10 and #34 and should be deleted.

47. In the context of USAID’s reengineering effort and the strategic objective approach to bilateral mission programming, AELGA’s future must be developed at either the Regional or Global level within USAID, even more than before.

■ This is not a recommendation, but a statement. The intention of this statement is not entirely clear, but reengineering will have its effect on the evolution of AELGA regardless of this evaluation. If this was to remain as a recommendation, it needs to be rewritten to: “AELGA’s future should be determined in accordance with current reengineering processes within the Agency.” But even this is unnecessary.

48. Widespread inclusion of AELGA in official bilateral mission portfolios would be greatly facilitated by sound agri-economic justification for "proactive" control of l/g.

- This is not a recommendation. It should be deleted.

Collaboration with African Partners (pg. 91-92)

49. AELGA should not offer l/g control training on demand for national crop protection services.

- AELGA doesn't. This recommendation is not based on any observations nor is it discussed in the text of the report. For the record, AELGA has declined to conduct training in some cases. Recommendation should be deleted.

50. Choose crop protection services for training in proactive control of l/g according to whether they: 1) have a separate l/g control unit; 2) if l/g breeding areas are remote, they have agents stationed nearby; 3) the crop protection services are intrinsically strong and can put into practice the l/g control practices on a sustained basis; or 4) they receive basic institutional strengthening from another donor.

- It is difficult to understand this recommendation, even though it is fairly detailed. First, it is erroneous in assuming that AELGA does "proactive training" when our training has never been characterized in that manner. AELGA's bilateral training is done to train the trainer in all modalities of locust control, of which proaction is only a part. The recommendation implies that training should continue, but only where crop protection services are strong and there exist separate locust units in remote areas. Questions: what then is the rationale for training? Do we only train those who are already competent, or do we attempt to generate competence where it is needed and requested? Also, why only do training in places that is receiving assistance from "another donor?." The stipulations as listed in the recommendations do not seem appropriate and confuse the reason for doing training in the first place. Perhaps this recommendation, if it is to be accepted at all, should be revised to: "AELGA should target its bilateral train-the-trainer course for those countries that: 1) have requested the assistance, 2) are subject to emergency pest outbreaks, 3) and show a clear interest in carrying out training in the most sustainable fashion possible."

51a. The relation of AELGA's strategy of strengthening national crop development units and its relation to AELGA's objective of reducing the frequency and size of l/g plagues and the damage done by them, needs serious analysis and reconsideration. Specific hypotheses implied by the AELGA approach which must be tested and proved in general and on a case-by-case basis are:

- Extensionists, agents and farmers can reach the necessary high kill rate on swarms over wide areas.

■ This shows a misunderstanding on the part of the team about farmers and extensionists. First, campaigns are not carried out solely by farmers and extension agents. Farmers and extension agents are only a part of the picture; crop protection services and regional organizations do much of the control. This recommendation attempts to predispose a training effort to failure based upon wholly arbitrary, unreasonable and inappropriate criteria. The recommendation should be deleted.

51b. Crop Protection Services personnel can leave their cropland posting for long, difficult periods of desert travel, and are, or can be, equipped to do so.

■ Crop protection personnel do not necessarily have to leave croplands for “long, difficult periods of desert travel.” In fact, in many of the most critical breeding areas in the world (e.g., along the Red Sea coast), one can reach the most significant sites within two or three hours by car. In other areas, travel has been done by the national crop protection services in recent campaigns, and there has been no evidence provided in the evaluation report to indicate that such travel cannot occur. Training should, furthermore, not be contingent upon whether or not there is desert, or that breeding areas are 10 miles or 300 miles away from the capital city. In fact, AELGA train-the-trainer courses are carried out in several provincial capitals within each country to ensure a cadre of trained personnel throughout the country. This recommendation should be deleted.

51c. Conversely, show that long difficult periods of desert travel are not necessary reaching proaction/prevention objectives.

■ See #51b. Delete this recommendation.

51d. Crop Protection Service participation in l/g control of a proactive or preventive nature does not detract from the carrying out of other crop protection which are as or more important as l/g control to agriculture and farmers, economics and well being but less well-funded, equipped, and supported with training by donors.

■ This recommendation has two flaws. 1) It presumes that locust control is more well funded in the crop protection services and is supported by more donor-sponsored training than routine pest management. This is not true. No such analysis was conducted, and no evidence for this sweeping statement is provided. As the justification for this recommendation, it is erroneous and should be discarded. 2) AELGA does not need to prove that locust control efforts do not detract from other crop protection efforts by the Ministry of Agriculture. The MOAs set their own priorities in this regard, and it is not AELGA’s place to do this for them. Also, any

activity that does not relate directly to routine pest management, even in the United States, will detract temporarily from routine pest management operations. There will always be a trade-off -- it is to be expected and should be considered as being moot -- when one activity must occur to displace another. This recommendation should be deleted.

52. Without knowing more about AELGA and EMPRES plans regarding regional structures, the evaluation team cannot comment. Suffice it to say that the combination of: FAO, facilitation, coordination, catalysis, research, training and establishment of headquarters in the region where l/g swarms originate is challenging and deserves careful analysis.

■ This is not a recommendation, and it suffers from some misperceptions which are addressed in the review of this report. This paragraph should be deleted from the recommendations section.

53. In general, institutional factors and obstacles which must be systematically analyzed and solved by l/g proaction or prevention programs include recurrent costs, technology transfer systems, dependence on dying or defunct regional organizations, hostility within and between nations, unwise government policies and interdisciplinary collaboration.

■ This is not a recommendation and it should be deleted.

ANNEX F: TEAM MEMBERS' RESPONSE TO RSSA COMMENTS

Of the 300 or so grasshoppers and locusts in Africa, only about 30 are considered to be of economic importance to agriculture. Of these, 7 are locusts: (Tree Locusts)-*Anacridium* sp.; (Italian Locust)-*Calliptamus* sp.; (Maroccan Locust)-*Dociostaurus maroccanus*; African Migratory and Malagasy Migratory)-*Locusta migratoria* apt; (Brown Locust)-*Locustana pardalina*; (Red Locust)-*Nomadacris septemfasciata*; (Desert Locust)-*Schistocerca gregaria*. The remainder are grasshoppers, three of which are considered migratory and show some other locust behavior. These are the (Senegalese grasshopper) *Oedaleus senegalensis*; (Sudan Plague Locust)- *Aiolopus simulator*; and the (Stink grasshopper)-*Zonocerus variegatus*. The life cycle of each of these is described in the PEA Annexes.

It was not possible in the time allocated to delve into the activities of AELGA with respect to each of these so the evaluation team concentrated on the Desert Locust, (the pest on which AELGA has concentrated its efforts to date) and to a much lesser extent on the Malagasy Migratory Locust and the Senegalese grasshopper.

The AELGA Project Paper calls for a program aimed at locust plague prevention. Webster defines a plague as a calamity: a destructively numerous influx <a plague of locusts>. According to Waloff, 1966 the generally accepted definition is "a period when many countries are infested by successive generations of gregarious locusts." However, it is recognized that in certain instances a plague may occur within a single nation or a small group of nations where there are complementary breeding areas. Examples are the Malagasy Migratory Locust in Madagascar, Plague Locust in Australia, *Schistocerca paranensis* in Argentina and Brazil, *Locusta migratoria manilensis*, known as the Oriental Locust in China, and the Philippines Migratory Locust, in the island nation.

At the beginning of this century C.V. Riley and others working in the United States, that preventive, rather than remedial, action could be taken against locusts by attacking them in their remote breeding grounds instead of waiting until they were in crops. For two African Locust species, the African Migratory Locust and the Red Locust the theory of plague prevention became a reality in the 1940's with the delineation of relatively small primary source outbreak areas (holdover areas), and the establishment of regionally financed organizations to carry out the necessary survey and preventive control.(OICMA and IRLCO). Until these organizations demise (OICMA in 1988 and IRLCO though still alive is almost without operational funding) there were no plagues of these locusts.

With the Desert Locust, there are no permanent source areas. We know the general location of seasonal breeding areas (Complementary areas), and we know that Desert Locusts must be able to migrate between these complementary areas in order to reproduce and multiply. So if one of these links is broken, by drought or controls, etc. populations cannot reach plague levels. As is often the case, an upsurge in one region of the recession area will decline by itself in two to four years if there are no complementary breeding areas with suitable conditions for

continued expansion of the populations(Waloff). Therefore, though upsurges occur frequently, plagues are much less frequent, even without controls being applied. This does not suggest that controls should not be applied to outbreak or upsurge populations. The evaluation team concurs with most locust experts that controls should be applied at the earliest possible moment, preferably immediately upon observance of gregarious tendencies, referred to as the transform phase, to assure that populations do not develop to the point where migration to complementary breeding areas or significant agricultural loss could accrue. (early intervention, also known as plague prevention).

But, the team is well aware that a preventive program is not possible in many instances as the sources of gregarization remain undetected, so it may be necessary to fall back to a program of outbreak or upsurge control which is primarily aimed at minimizing crop loss and restricting or slowing infestation spread through swarm migration. This is the apparent approach supported by the AELGA staff. It certainly is not new, as the AELGA staff admits. They n just gave this particular nuance of the term a simple name",which they call pro-action.

The evaluation team believes strongly that pro-action (upsurge control) will not prevent plagues with the strategy being pursued by the AELGA staff, almost complete reliance on control efforts by national crop protection services. There is ample evidence to support this determination. In both the Desert Locust plagues of 1952-1965 and 1985-1994 initial gregarious populations were attacked rather quickly by nations with specific locust control organizations. Their efforts were negated by the lack of timely effort on the part of those nations without such organizations, even with the rapid response of donor nation control specialists. And, how does the team entomologist know? In both instances he was there.

It must also be asked, with its efficient crop protection service, probably the best in Africa, why in 1987-1988 a Brown Locust plague was allowed to develop in the Karoo Desert of northern Union of South Africa. Also, why does Australia, with one of the most efficient crop protection services in the world, maintain a separate service, Australian Plague Locust Control Commission, to keep this locust pest under control?

In its rebuttal to the report the AELGA staff states:

. “The vast majority of the reports arguments fail to recognize that grasshoppers are a focus of AELGA”; and that grasshoppers differ in that they do not fly in extremely mobile swarms.

The evaluation team does recognize the grasshopper responsibility of AELGA, but, 53% of AELGA’s expenditures were for control of locusts. Nowhere was the team made aware of expenditures specifically for grasshoppers. AELGA team members have apparently

never been purview to a swarm of *O. senegalensis* or other grasshoppers such as *Trimerotropis palidipennis* in southwestern USA and northwestern Mexico.

. “The report reflects a basic misunderstanding of AELGA’s train the-trainer courses when it criticizes AELGA for not training pilots during these courses”

The evaluation team was critical of the fact that the Eritrea crop protection service (not the pilots) had obviously not been trained to assure correct calibration and the so the DLCO-EA aircraft sprayed only ½ liter of chlorpyrifos per ha. rather than the recommended 1 liter per ha. But, DLCO-EA was not alone. The Eritrea crop protection service made the same error in its ground application.(18,068 ha. controlled, utilizing 9,250 liters of pesticide, according to Eritrean MinAg figures).

The team does not favor continued aerial spray pilot training for national crop protection services like that provided to Niger in 1995. The team recalls that during MSI’s evaluation of the AID/FAD Integrated Pest Management Project in 1978, both Canada and Germany were engaged in the development of an aerial control unit in Niger. Pilots, aircraft mechanics and ground support personnel as well as extension agents were provided training. How often should this type of training continue?

. “IT is ironic to note that the evaluation team entomologist himself, as recently as 1994, has recommended that AELGA and USAID/Senegal carry out training along the same lines as what AELGA is doing now.”

There is an obvious difference. Senegal is not a Desert Locust recession area nation. It is part of the invasion zone. Infestations do not originate there. Locust control in Senegal is purely for the sake of crop protection.

Senegalese grasshopper infestations do develop in Senegal. But this is primarily a crop protection problem. Infestations normally develop within or closely adjacent to the principal cropping area, the peanut basin. If it is not controlled it can migrate to the savanna of southeastern Mauritania where a third generation may develop, to return to Senegal.

. “While unqualified support for DLCO are pervasive throughout the report, no such support is being urged for other regional organizations, such as IRLCO, OCLALAV and the Maghreb Task Force.”

As has been stated previously, the team concentrated its~ evaluation on the area where AELGA has been most active, East Africa, and the Desert Locust. The team would have liked to have visited with IRLCO, but were not provided authorization to do so. The team

entomologist is well aware of OCLALAV, what it once was and what it is now. Since France and Canada are fully supportive of OCLALAV there appeared little need for the team to delve further. Since the capability of the Magreb Task Force is within the Near East Bureau rather than the Africa Bureau comment was not deemed necessary. In any event the MSI entomologist was a member of the US delegation to the conference in Fez, Morocco, called by King Hassen, in which the task force concept was conceived.

. “The opinion that the 1992-1994 outbreak was part of the 1986-9 plague is absolutely unsubstantiated. There are no publication~ or reports that support this.”

The team entomologist stands by this hypothesis. Until definitive evidence can be provided to show that gregarious locusts were not present in localities such as Northern Chad, the Horn of Similar, or the Hadramowt of Yemen, this remains a high possibility. During the 1952-65 plague a similar up and down pattern of infestation was recorded.

. “Contrary to the AELGA review of the first draft of the evaluation and numerous publications, the evaluation team persists in maintaining that significant quantities of locust swarms were blown to sea in 1992-1994 when this actually occurred in 1988. While the evaluation team entomologist did report that locusts were moving to Cape Verde there was no reliable quantification of this movement, and it indicates that the outbreak was spreading to Cape Verde rather than causing a demise of the outbreak.”

During plagues and major Desert Locust upsurges, the insect has often been reported by ships in the Atlantic, Mediterranean, and Red Sea. During the 1985-1994 plague years, Desert Locusts reached the shores of Italy, Spain, the western hemisphere, and as far north as the United Kingdom. The reasoning that the locusts that arrived in Cape Verde indicates that the outbreak was spreading to Cape Verde rather than causing a demise of the outbreak could also be attributed to the Desert Locusts that reached Barbados, Trinidad and Surinam , Spain, Italy and the United Kingdom. The team holds to its position that the locust movement to the Atlantic, of which some reached Cape Verde, and the southerly movement to the tropics were major incidents that substantially impacted on the total infestation.

. “The evaluation report is in error when it insists that the 1995 locust infestation of Eritrea originated within Eritrea.---The rationale the report uses to justify this point is: 1) The Eritrean Ministry of Agriculture is lying (!), 2) that only 30\ of all hopper bands are found (this was based on a personal communication with persons not even involved with locust control), 3) that locust movements are based on wind conditions, 4) the irrelevant, unproven, and undocumented idea of locust trajectories and 5) a perplexing assertion that the swarms may have even come from Somalia!”

. The evaluation team challenges the AELGA staff to show proof to support their statement that the evaluation report accuse. the Eritrean MinAg of lying. The evaluation team has in its hands documentation, that many of tho swarms that reached the highlands of Eritrea in 1995, developed from hatch in Eritrea's western lowlands; (FAO reports provided the team by the AELGA staff and FAO).

The personal communication was certainly involved with persons involved in locust control; Dr. George Popov, FAO's premier consultant for locust/grasshopper control and recognized as the world authority on locusts and grasshoppers in Africa and the Near East: Dr. Reginald Rainey, the expert on locust and Armyworm migration patterns in Africa. The knowledge that swarming locusts move downwind to areas of low level wind convergence originated from research conducted by Dr. Rainey; John Sayer, the inventor of the most widely used locust control instrument, the exhaust nozzle sprayer, and the researcher who linked the Red Sea Convergence to the ability of Desert Locusts to traverse the Red Sea; Cliff Ashall, former Director of the prestigious Anti-Locust Research Center, London (now part of the Ministry of Overseas Development), and Dr. Vernon Joyce, the ALRC control expert. It seems inconceivable that the technical advisors to the AID/Africa Emergency Locust/Grasshopper Project are unaware of these people who are largely responsible for the foundation knowledge of locust, biology, behavior and control and survey technique on which modern day approaches are based.

That locust movement is governed by wind direction has been proven untold times, since Rainey, 1951 put forth this hypothesis Locust trajectories have been mapped by Rainey, Sayer and others through windfield studies on a daily basis over many years. They are real and should be utilized in devising control strategies.

Charles Temple, former USAID Advisor to the Ethiopia Ministry of Agriculture, conducted extensive aerial surveys in the Danakil Desert of Ethiopia (now Eritrea) during the spring of 1968. "These surveys revealed that a late spring reversal of windflow could occur along the Intertropical Front, diverting swarm movement to the west and north along the Ethiopian escarpment, eventually to arrive in the lowlands of western Eritrea and eastern Sudan rather than the Mijertein of Somalia. this knowledge helped explain the origin of swarms which in the past had suddenly appeared in the northern Ethiopian (Eritrean) highlands with seemingly no advance warning." (Cavin, 1970). For his work in Ethiopia, Emperor Haili Selassie presented Capt. Temple with Ethiopia's highest civilian award.

. "Some of the team's comments on pesticide stocks are pure speculation-they say that unlabeled stocks are the property of DLCO, then they make a quantum leap to say that those stocks were donated from USAID."

According to Ato Adefris Bellehu, former DLCO-EA Director and now a US citizen residing in Seattle ,Wash.-the pesticides in the Gonderand storage, to which the team

refers, was principally malathion and probably some dieldrin left over from stocks supplied by USAID and possibly other donors during the 1960 plague years. To his knowledge it had been decanted once from rusting and leaking drums into new drums. Supposedly each drum had the contents painted on but they were no longer readable at the time of the evaluation team's visit.

The nearby storage facility, which the evaluation team visited, may have been the equipment storage facility referred to by the AELGA staff. It did contain small cardboard containers and sacks of pesticide dusts, fungicides and weedicides in addition to application equipment.

"The report seems to favor allowing outbreaks to go unchecked to "prove" that they can become plagues."

The report says nothing of the kind. Many economists who have attempted an economic threshold state that an uncontrolled plague may be the only way to get a truly accurate assessment. But they agree that this would not be plausible.

"During the 1992-4 campaign, the evaluation team entomologist himself indicated in his written communications and preliminary report that emergency use of helicopters and multi-engine aircraft in Senegal may be necessary. AELGA cautioned against this idea and the outbreak was controlled in a month by the crop protection service and small fixed wing aircraft."

This is a complete fabrication, and innuendo, and exhibits an unfavorable reflection on the AELGA staff professional status and that of their professional societies. Copies of the entomologists reports have been submitted to AID/AFR as evidence. The Desert Locust infestation was not controlled in one month. The 1st swarm arrived in northern Senegal on Oct. 5, 1993 and the last swarm observed was in southeastern Senegal on March 9, 1994, a full 5 months later.

In 1993 the entomologist proposed, a continuation of the present ground control efforts by CPS and farmers against larval bands, but some would go undetected so either a small fixed wing aircraft or helicopter should be positioned in northern Senegal for 15 or 20 days for aerial survey or control. Both of these aircraft were operating in Mauritania, funded by AELGA to FAO and had been promised to Senegal when requested.

In 1994 the entomologist notified USAID/Dakar that if locusts did appear later, the Canadian proposal to support OCLALAV should meet most needs at presently anticipated population levels for all of west Africa.

The entomologist proposed a survey for *O. senegalensis* in 1994 since no formal survey had been conducted in 1995 and if warranted, an early intervention control program, utilizing at the most, small fixed wing aircraft.

. “Large plagues are relatively rare occurrences is completely unsubstantiated by the report. From the late 1930’s to the present, at least seven large plagues have occurred.”

Waloff, (1976) reports seven major Desert Locust plagues between 1861 and 1963 and there has been only one since then 1985-89 (or 94). From the 1940’s there have been no plagues of the African Migratory Locust and the Red Locust. This to a great extent is attributable to Regional Organization’s efficient early intervention control.